

GatorIT iPad Deployment Process



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Gateway School District



This Presentation and any Scripts mentioned will be available on GitHub:

https://github.com/JCSmillie/GatoriPad_DeploymentProcess_Presentation



About Gateway

- ❖ Located in Monroeville, Pennsylvania (just outside Pittsburgh)
- ❖ 3,200 across 4 elementary schools, 2 middle schools, and 1 high school
- ❖ 600 Staff (over half issued Laptops)
- ❖ MacBook Air (2020) for all teachers: Mac OS (100%)
- ❖ iPad 7th gen or better for Teachers who want them



About Us

Jesse

Mac & Linux Operations Engineer

- With GSD since 1999
- ACMT since 2005
- Solo Apple Tech until Sept 2021
- Presenter at PSU MacAdmins 2019
- “Ask Apple: Mosyle Spotlight”
Presenter April 2021



*Drinker of the Apple Kool Aide and
future Mosyle Cult member*

Jennifer

Child Accounting Technology Support

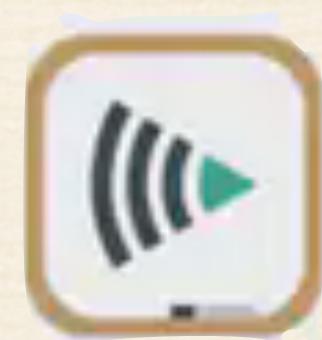
- With GSD since 2021
- Previous Apple employee until 2021
- Pursuing Apple certification
- Create and present presentations to elementary students on iPad care



Addicted to Starbucks!

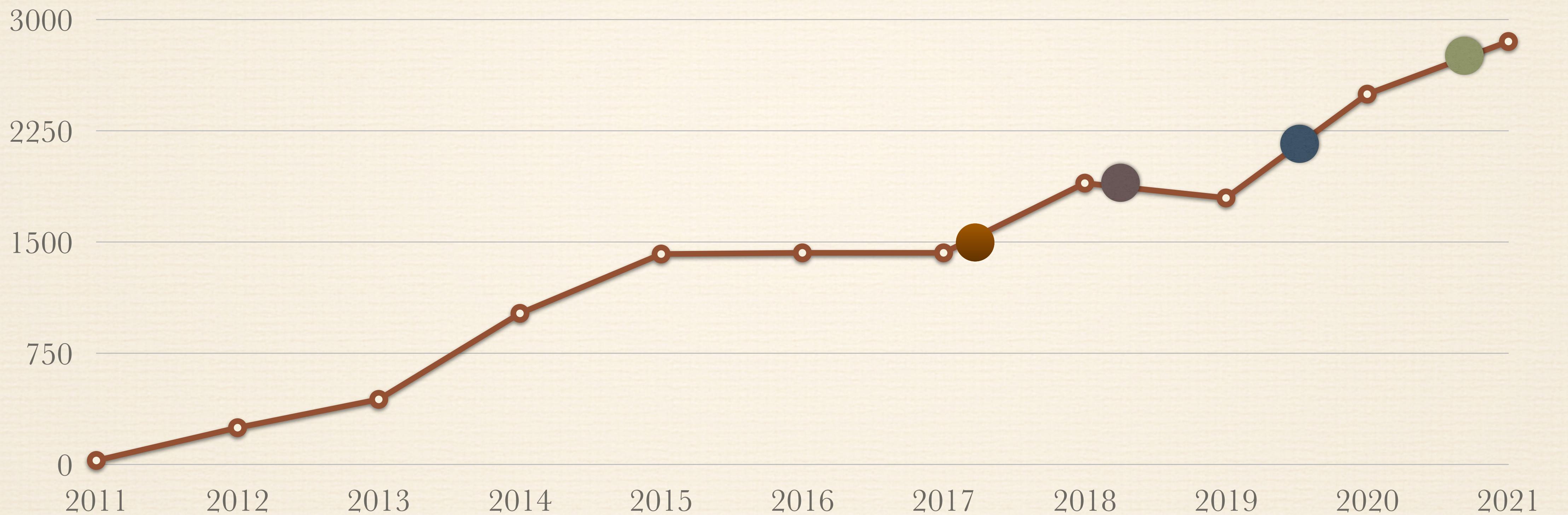
Technology Deployed at a Glance

- ❖ 4 Technicians and 1 Director
- ❖ Elementary (K-4) 1,260 iPads 1:1
- ❖ Moss Side Middle (5-8) 1,024 iPads 1:1
- ❖ Gateway High School: About 1,200 1:1 Chromebooks and a cart of Shared Mode iPads (30)
- ❖ District Wide Staff 250 iPads in hand
- ❖ All Apple hardware enrolled in JAMF Pro April 2012 to January 2020.
Mosyle Manager April 2020 to current.



MOSYLE
manjager

iPad Growth in the District



● MSMS 1:1 5th/6th

● Shared Mode iPads in every Ele Classroom

● Elementary changes from Shared iPads to 1:1

● 8th Grade goes iPad instead of Chromebook

iPads 1:1 K-8 Life Cycle

- K & 1st get oldest iPads (hand me downs from 5th & 9th.)
- 2nd grade NEW iPads, will keep through 4th grade
- 5th grade NEW iPads, will keep through 8th grade
- 9th grade trade in for Chromebooks.

On an iPads 5th year it is retired from GSD

New iPads get 4yrs AGiRepair Protection Plans



I will charge my iPad at home in the evening.

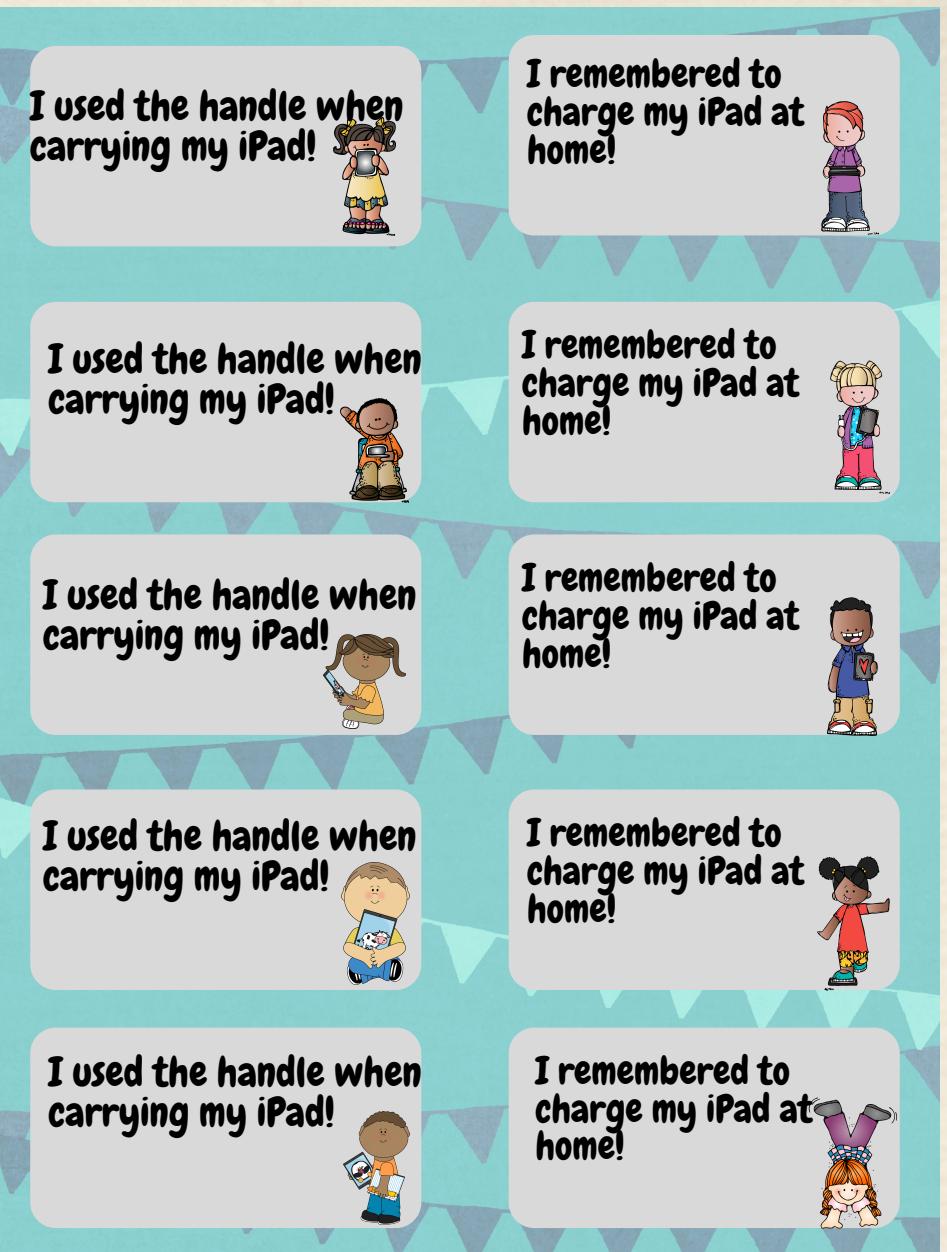


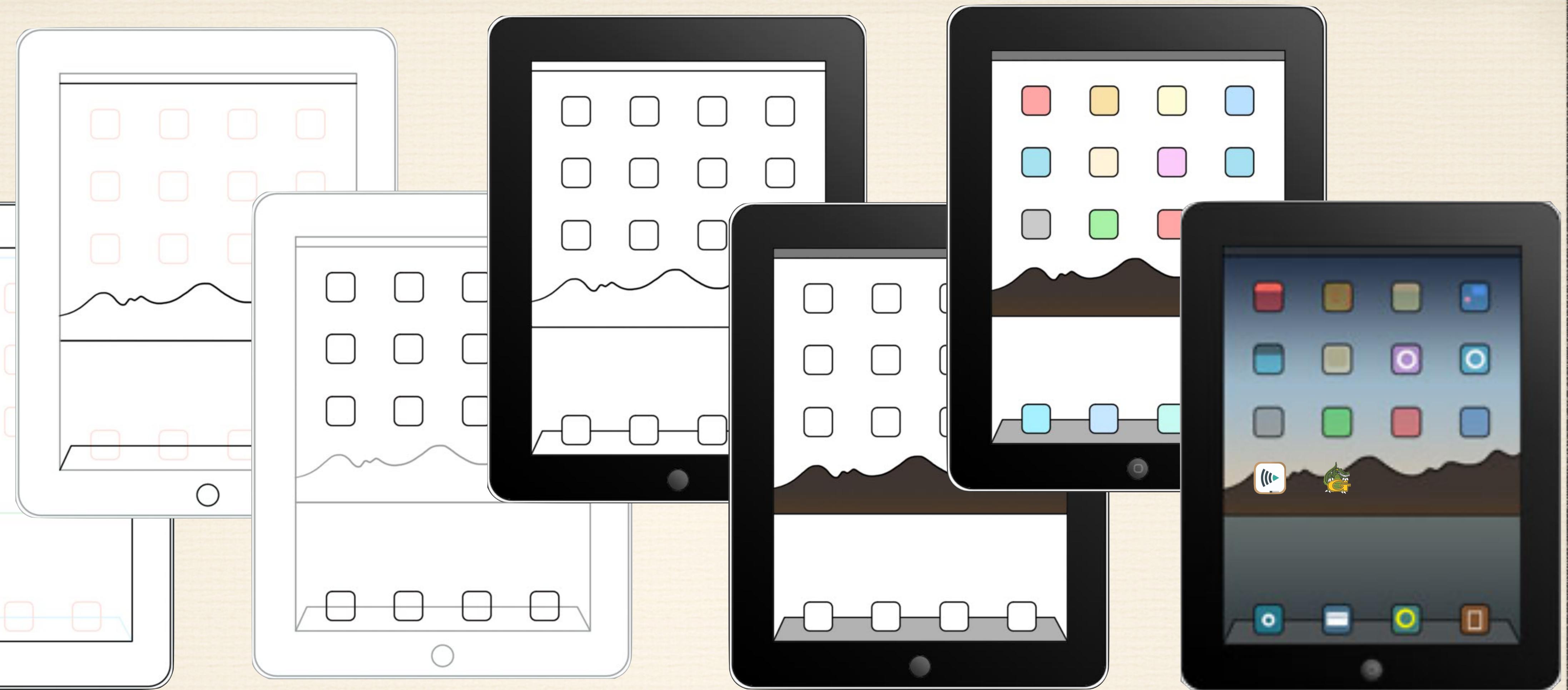
IPAD CARE

School iPad Rules



iPad Care Presentations





Deploying iPads with Mosyle

And liking it!

4 States of iPads in Mosyle



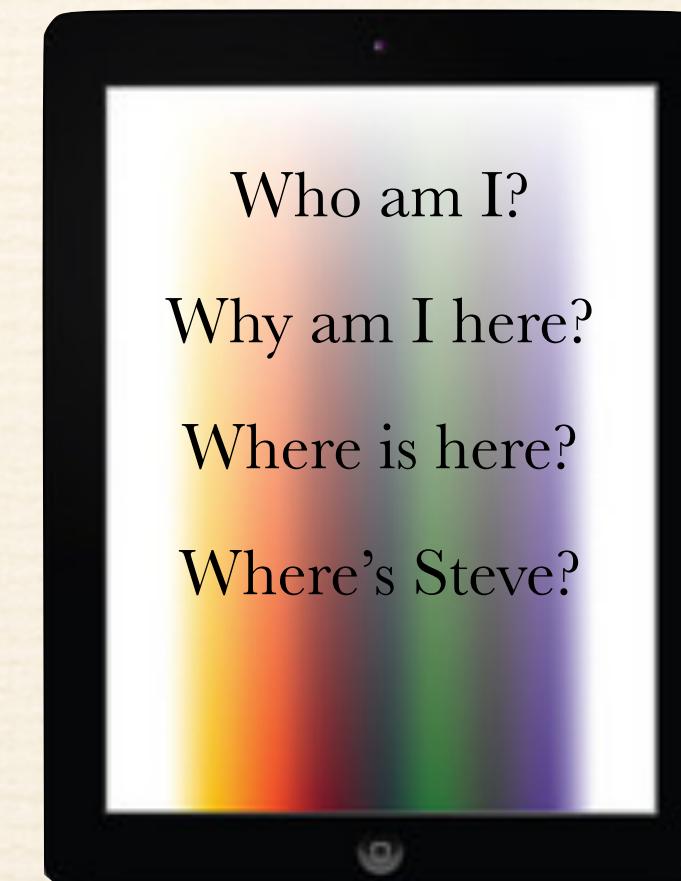
1:1 Teacher/Staff



1:1 Student



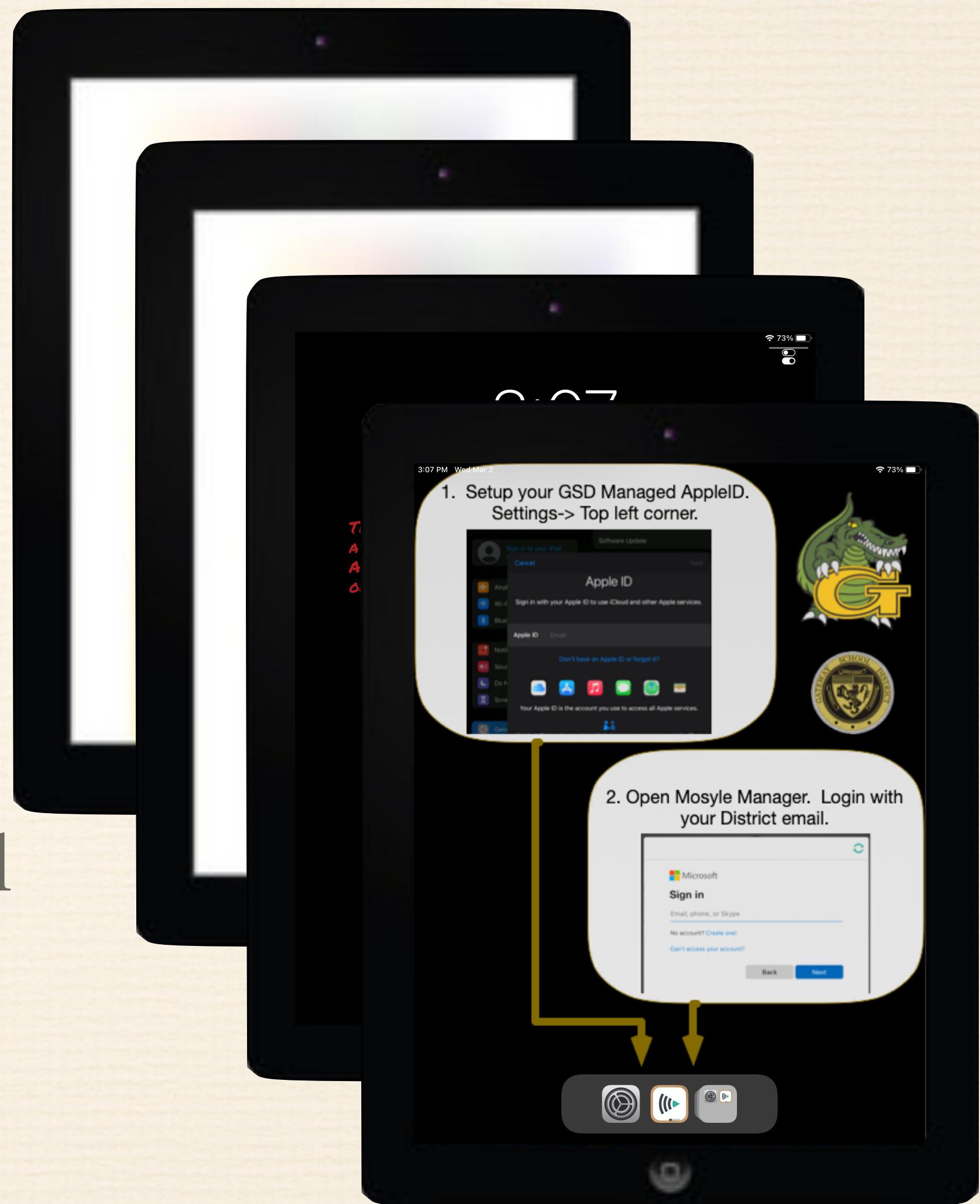
Shared Mode



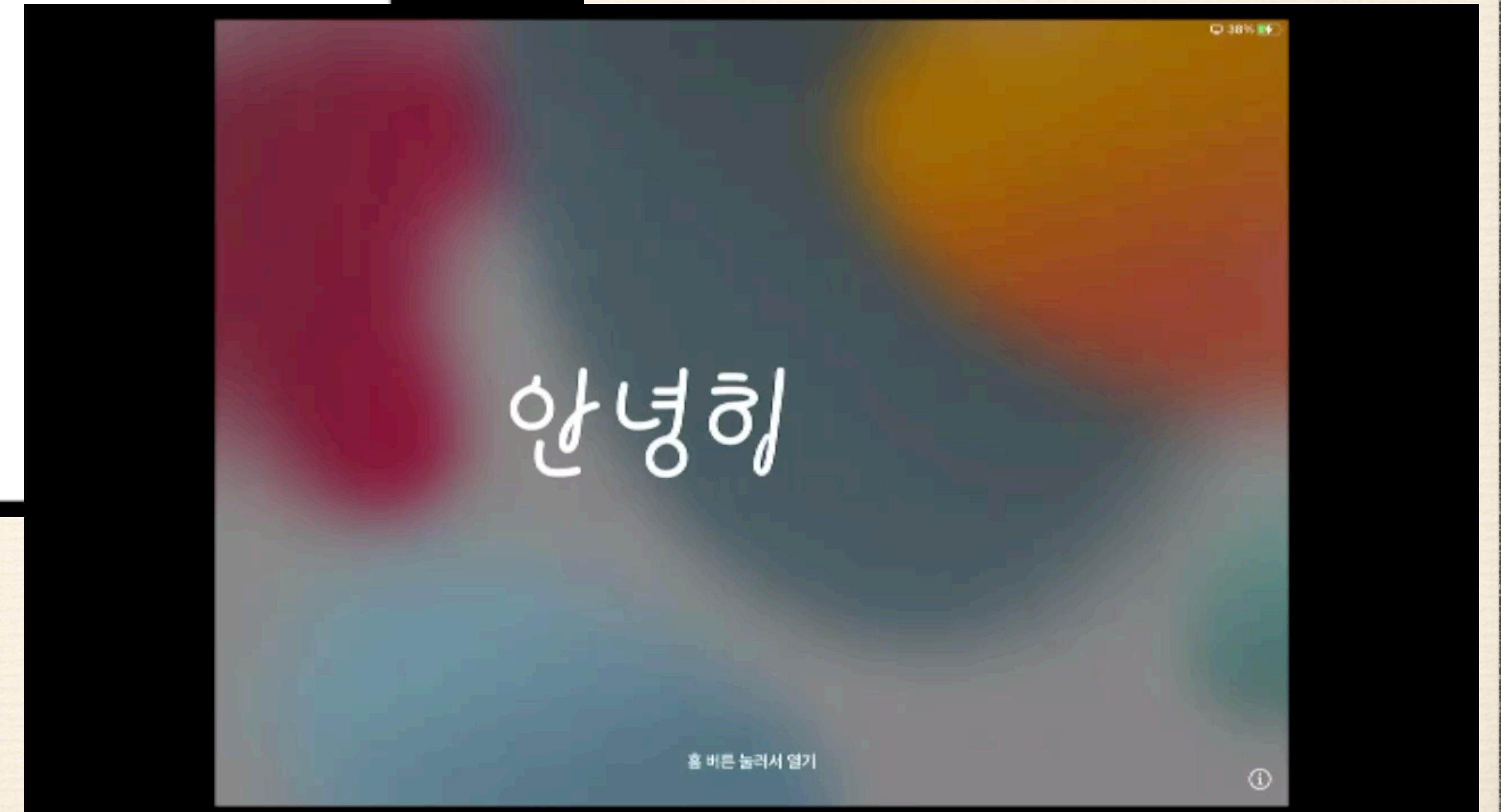
Limbo

In GSD All 1:1 Roads start with Limbo

- ❖ After Hello screens iPad goes right to Limbo.
- ❖ Apps deemed as must have for all are tied to Limbo. This way those apps are there from the beginning.
- ❖ Limbo iPads are only “Allowed” Manager and Settings. This forces setup. Login to Manager and iPad is now usable. Apps for all appear. Additional apps by grade install.
- ❖ Custom Wallpaper tells you to login.



The Old Way



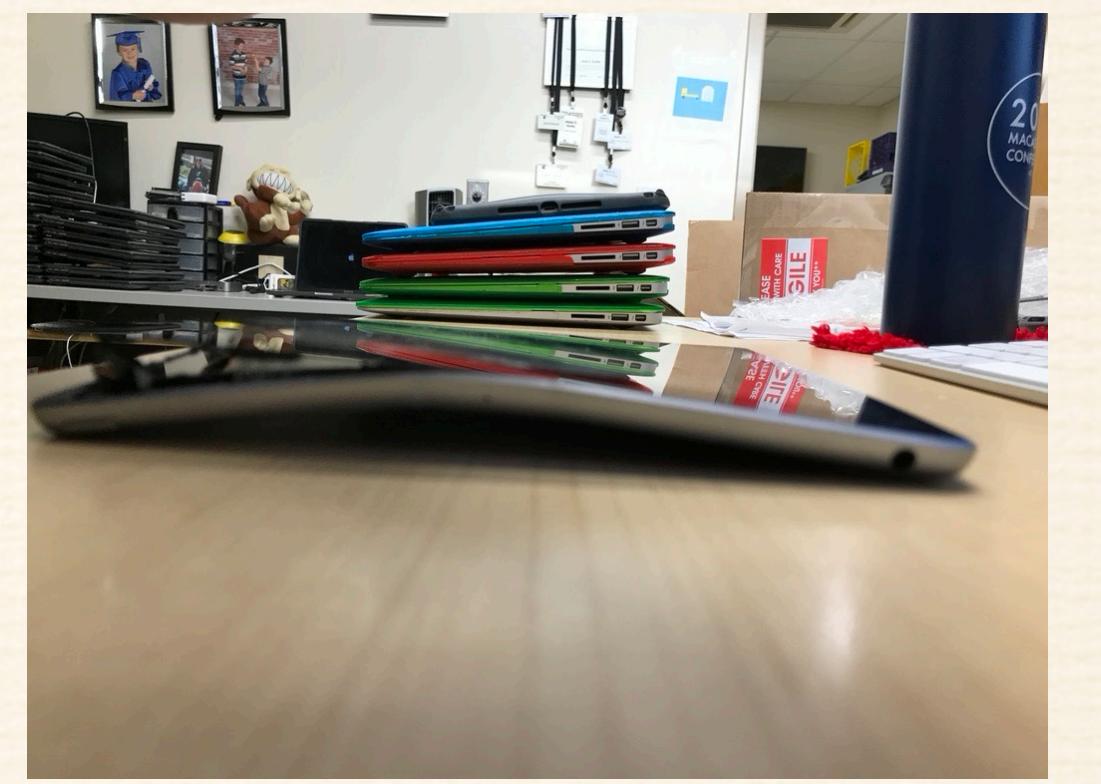
The Limbo Way

Why do it this way?

- ❖ Speeds up iPad deployment (from my hands to their hands)
- ❖ Limbo iPads are inventoried, on charge, and automatically updated. Always ready to be handed out. In charging/storage carts until then.
- ❖ Avoids big wifi draw during hand outs. Post login by student/staff they are ready to use. Apps are there.
- ❖ Bad certificates, bad time on iPad, MDM server “hiccups” play less of a role as they don’t happen when the student/staff is standing here waiting to pickup.

iPad Storage Carts





When iPads go Crack



Your dirt in. Your dirt out.

Unless its destroyed, you always get the SAME iPad back.

- ❖ Loaners are issued. These are Shared Mode older iPads
- ❖ iPad is shipped to GHS in a padded case
- ❖ iPad goes out to AGiRepair
- ❖ iPad goes back to Building and original holder.



Students may be charged for repair in situations where iPad's case has been modified or extreme damage has occurred.

So how can we make this better?

API Magic

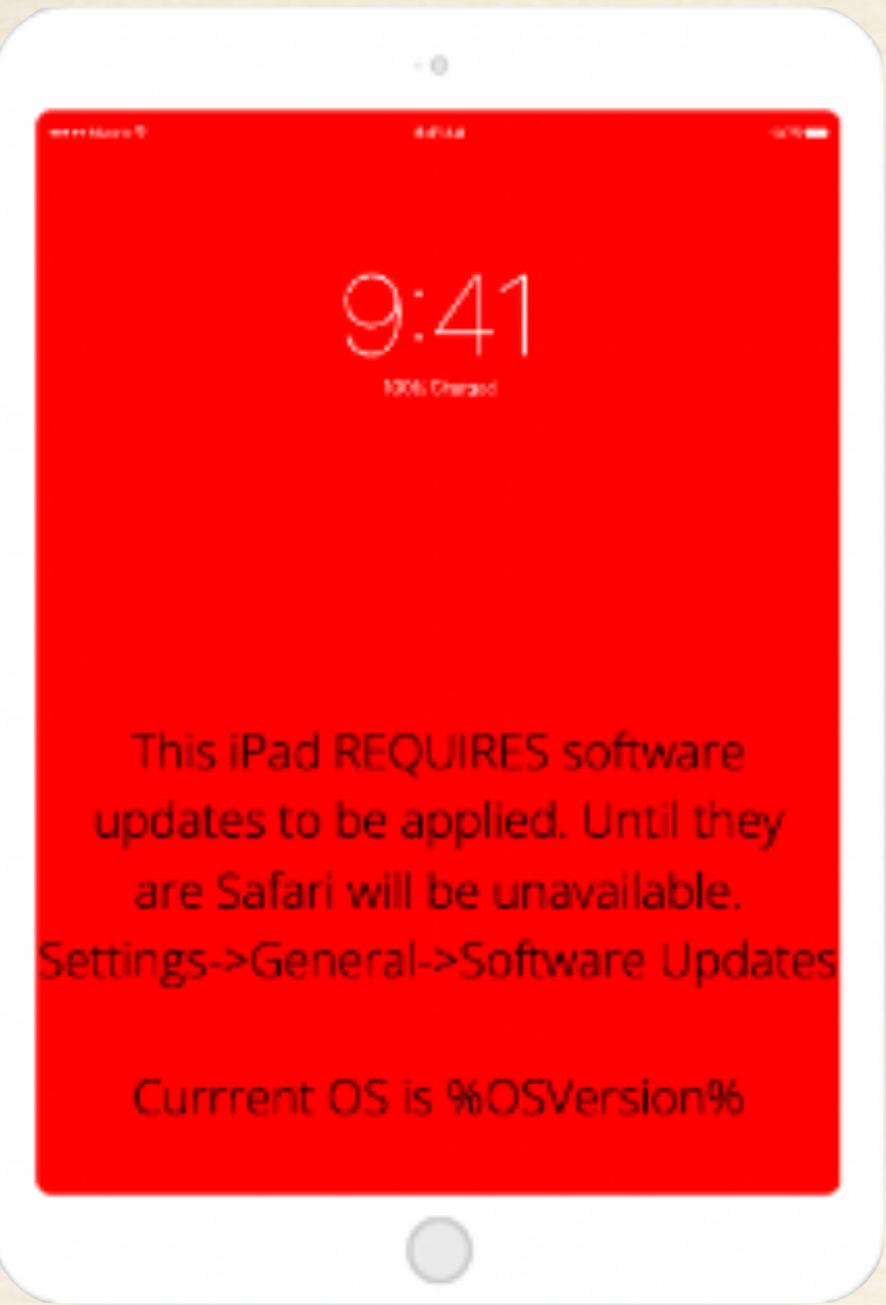
MDM Device Groups

CLI Scripting



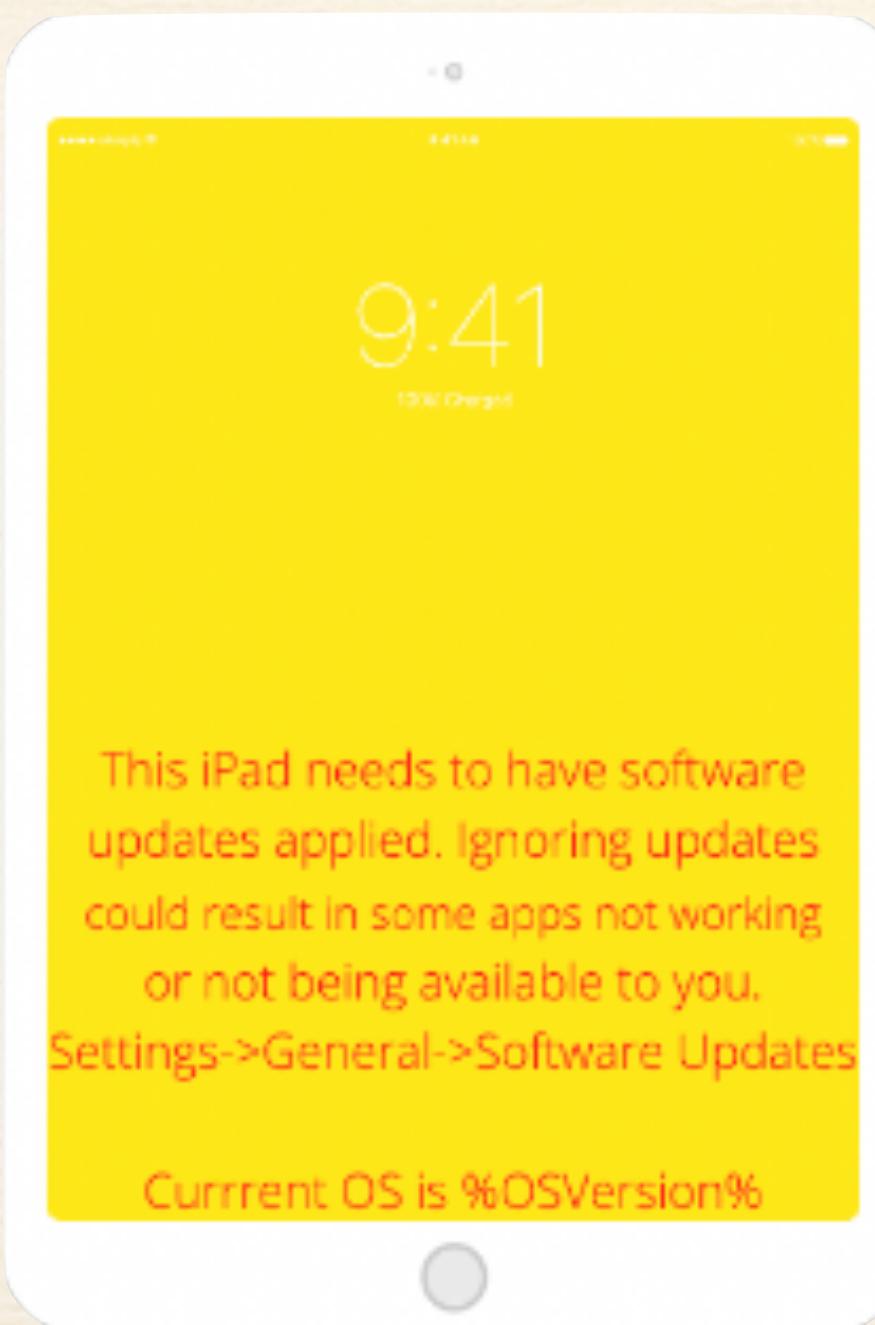
Know we have a Problem before you do...

- ❖ API Scripts find out who's device isn't checking in for inventory. Initially just email student, parent, & homeroom teacher.
 - ❖ 14 Days use IncidentIQ API to make a ticket for IT to seek them out
- ❖ Device Groups built to locate iPads not doing Updates or other issues. Wallpaper changed to indicate.
- ❖ API scripts to disable iPads of withdrawn students nightly.
- ❖ API scripts to query inventory of hardware (IIQ) and make sure asset tags are filled in.
- ❖ API scripts to add “Tags” to devices based on outside placements, Cyber, GATE, etc

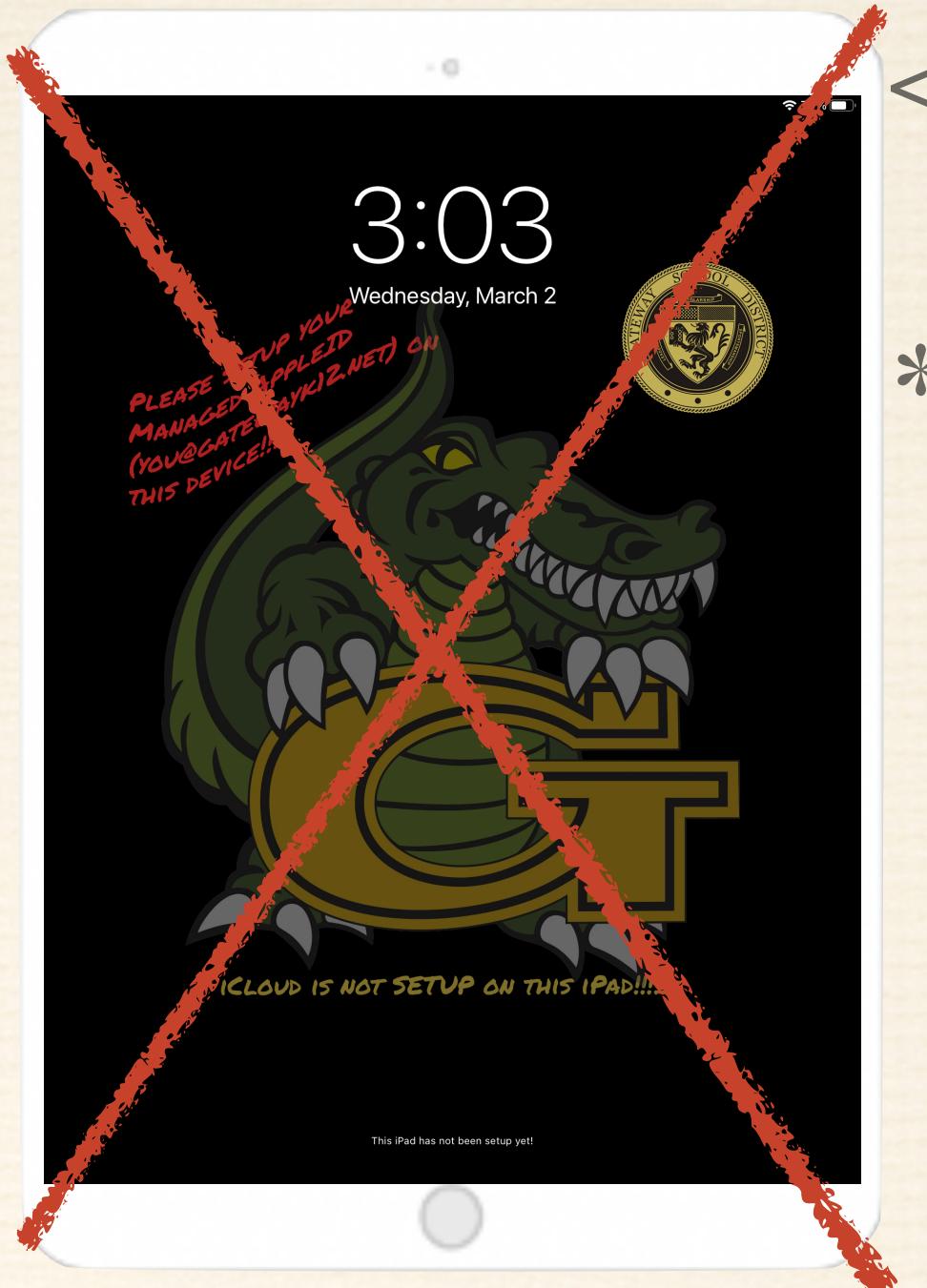


Needs updates->
Updates

<-REQUIRES
Updates



REQUIRES->
Location
Services



<-REQUIRES iCloud
Setup
*Per GSD IT Procedures
must be Managed AppleID
← MDM
detection now
broken in
iPadOS 15.3.1



Command line quick Tasks - MOSBasic

<https://github.com/JCSmillie/MOSBasic>

- ❖ Homebrew solution not necessarily for a problem but to do more faster.
- ❖ Simple ZSH script with separate command scripts to do fast tasks on MDM controlled iPads through the MDM.
- ❖ Supports “modules” to gather more data from ticket systems, SIS, other further expansion. IncidentIQ support today.
- ❖ Requires API access

Things MOSBasic can do

- ❖ Lostmodeon by asset tag
- ❖ Lostmodeoff by asset tag
- ❖ Whoislost (outputs mass list)
- ❖ Annoy by asset tag (must be lost first)
- ❖ iOSwipe
- ❖ Iosdump, Userdump, Macdump (Dump date from Mosyle DB)
- ❖ Info by asset tag or user (iPad & Mac)
- ❖ Iosassign
- ❖ Listgroups (get ID numbers for other API functions)
- ❖ Serialcheck <-Compare list of serials to make sure they are NOT in Mosyle (think retired hardware)

Most of this can be done through the web page but that gets tedious for multiple



CFGUTIL

Think Apple Configurator2 but from the Command Line

CFGUTIL

<https://support.apple.com/guide/apple-configurator-2/use-the-command-line-tool-cad856a8ea58/mac>

- ❖ Installable from Apple Configurator 2 (Automation Tools)
- ❖ /usr/local/bin/cfgutil
- ❖ Can work on devices which has TRUST between the Mac and iPad
- ❖ Scriptable /usr/local/bin/cfgutil exec -a <YourScriptHere>

`/usr/local/bin/cfgutil exec -a <my script>`

- ❖ Executing this command will run your script every time an iPad is connected.
- ❖ Variables given to the script executed:



My Sweet Terminal >_ My Personal Cell Phone

cfgutil list

Type: iPhone13,2 ECID: 0x11XXXXXA81001E UDID: 00008101-00114849XXXXXXE
Location: 0x1100000 Name: DaDarkCarnival

cfgutil --ecid 0x11XXXXXA81001E get buildVersion

19D52

iOS 15.3.1

**NOTE: PAIRING AND/OR TRUST ARE NOT REQUIRED TO
GET THIS INFO**

So what can we do with this?

My Sweet Terminal > _Some random iPad in My Office

MYECID REPRESENTS
THE ECID OF THE IPAD

cfgutil --ecid MyECID restore

Installs latest compatible iPadOS

cfgutil --ecid MyECID install-profile /Users/Shared/MyWifiProfile.mobileconfig

*Installs a wifi profile with SSID, Username, & Password.
Should be a dedicated setup network. I use ‘Apple Store’*

cfgutil --ecid MyECID prepare --dep --skip-language --skip-region

*Tell the iPad to do DEP process, skip-language & Region.
Other “Hello” prompts will be skipped too per your enrollment config in your MDM*

NOTE: PAIRING + TRUST ARE REQUIRED HERE UNLESS IN DFU MODE

Biggest Pitfall of Configurator/CFGUTIL

Is Supervision Identity Trust

- ❖ If iPad and your configurator Mac have trust for same Supervision Identity you can easily do all sorts of things to an iPad like erase, update, etc.
- ❖ Without Supervision Identity you can't pair and can't do anything to the iPad (restore, update, etc.)

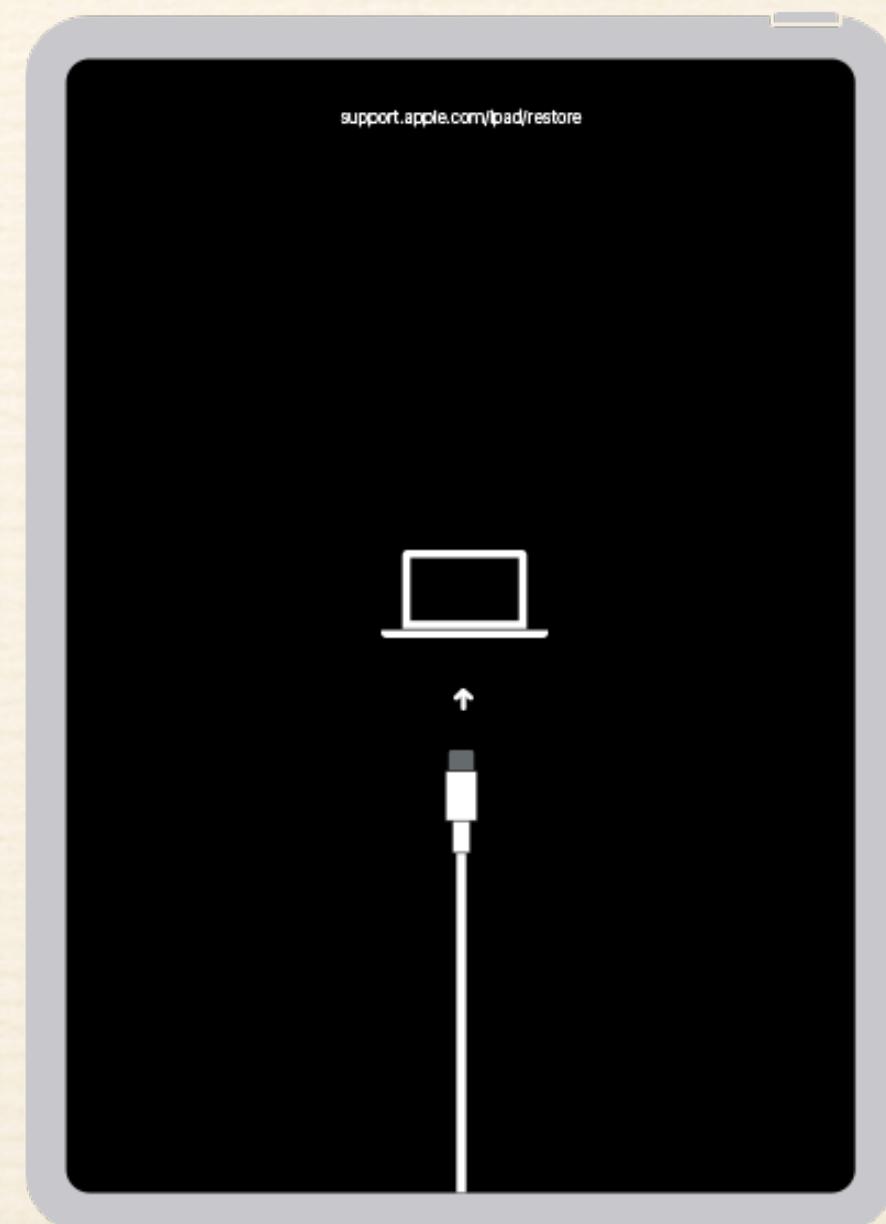
Ways around Trust Issues...

- ❖ Leverage MDM by using the ERASE command.

If iPad has checked in to MDM today
and its on wifi now easy way to go!

- ❖ Boot iPad to DFU mode. DFU mode
doesn't care about Trust.

Tedious on the thumbs but
maybe your last option.



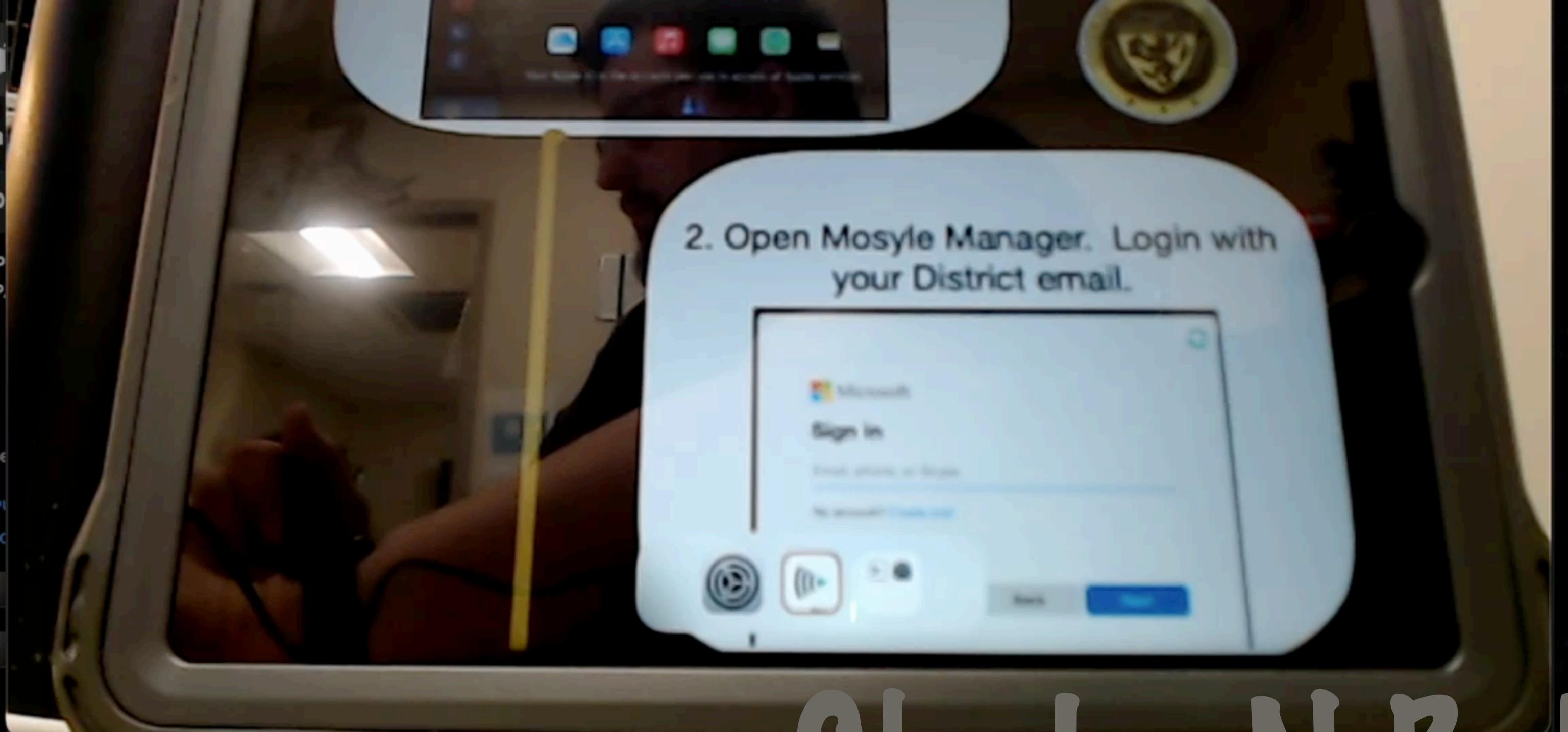
Impressed?



Are you not entertained?

ShakeNBake.sh

- ❖ Combine MOSBasic Libraries with CFGUTIL to automate iPad cycle
- ❖ Automated Wipe, Update, Provision, and then let DEP bat clean up.
- ❖ Work around Trust issues by leveraging MDM wipe ability.
- ❖ Clear back logged commands in MDM before setting up device.
- ❖ Disable Lost mode on the iPad we are working on.



```
2>/dev/null )  
  
continue. Put iPad in DFU or Factory Recovery Mode and try again."  
"and try again."  
  
when iPad boots back up."  
  
red.  
but not paired. ($devicebootstate / $devicepairingstate)." less than 12 hrs its a fair chance it works
```

Shake N Bake.....

```
jsmillie@GSD_iMac_H4: ~
```

```
110  
111  
112 if [ "$devicebootstate" = "recovery" ]; then  
113     log_line "RESTORE: $SECID / ($SUDID) device in DFU mode. Jumping right to restore attempt."  
114     FullPressWipe=$! bash -c "/user/local/bin/cfgutil --ecid \"$SECID\" restore" 2>/dev/null  
115  
116     if [ "$?" = "1" ]; then  
117         log_line "RESTORE: Epic Fail on $SECID / ($SUDID). Can't continue. Put iPad in DFU or Factory Recovery Mode and try again."  
118         rm -rf "$STMPLOCATION/CFGUTIL_SECID.txt"  
119         HayLookAtMe "iPad Update ${Red}Fail!.. Put in DFU mode and try again."  
120         exit 1  
121  
122     else  
123         log_line "RESTORE Success ($SUDID) - Next Steps will happen when iPad boots back up."  
124         HayLookAtMe "Restore SUCCESS."  
125         rm -rf "$STMPLOCATION/CFGUTIL_SECID.txt"  
126         exit 0  
127     fi  
128  
129 else  
130     log_line "RESTORE: Epic Fail on $SECID. Can't continue. Put iPad in DFU or Factory Recovery Mode and try again."  
131     rm -rf "$STMPLOCATION/CFGUTIL_SECID.txt"  
132     HayLookAtMe "iPad Update ${Red}Fail!.. Put in DFU mode and try again."  
133     exit 1  
134 fi  
135 }
```

What about us Other MDM people?

- ❖ The following pieces of MOSBasic are used by ShakeNBake.sh:
 - ❖ Tab Delimited Export of UDID, Serial, & Asset tag
 - ❖ If you can get this data out of your existing MDM or Ticket system you could easily adapt. Code is commented where necessary.

ShakeNBake.sh is not in my repo for public today... but if you want it email me.

A warning about running CFGUTIL in a Loop

- ❖ Some chargers/Sync stations disconnect the iPad from USB connectivity momentarily to switch from charge mode to no charge mode. When this happens, if you are running CFGUTIL exec, it will detect that drop/connect as a new connection and wipe it again.
- ❖ Think infinity loop of iPad wiping...

Known to work:

- ❖ Lock N' Charge U16SCB
- ❖ Lock N' Charge ELE7060
- ❖ Cambrionix Thundersync 3-16
- ❖ OWC ThunderBolt 3 Dock
- ❖ Intel Macs with lots of USB A ports

Known not to Work

- ❖ Griffin Storage Docks (Black & Silver)
- ❖ USBC to multi USBA port adapters.. Very finicky.

As a former Apple SE on our account used to tell me all the time “Mileage May Vary”



What about Automator?

- ❖ MacOS Catalina and down? Yup. You can do that.

<https://support.apple.com/guide/apple-configurator-2/automator-actions-cade0f4df56f/mac>

<https://configautomation.com>

- ❖ Big Sur and up? Nope. You can't install a wifi profile so you can't finish the device. Always failed.

*As of October 2021

Applying all of this to our
Loaner iPad pools

Today's Loaner Gotcha's

- ❖ Shared mode iPads student has to know their passcode. Great if they use their student ID number, bad if they don't and forget.
- ❖ Shared mode iPads don't update iPadOS if someone is logged in.
- ❖ Shared mode iPads SHOULD cycle old logins off device to ensure there is always free space for the next person. Doesn't always work.
- ❖ Shared Mode iPads and Securly don't play well together.
- ❖ Shared Mode iPads don't delete apps installed for individual users when they log out. It just stays behind even if no one ever uses that app again.

Regular iPads as Loaners

- ❖ ShakeNBake connected to ChargeNSync
- ❖ iPads waiting to deploy are just like regular iPads, but flashier cases
- ❖ Take iPad, log kid in, let them use it. When it comes back throw it in the charger and ShakeNBake takes care of the rest.



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Questions?

GitHub Resources Noted:

https://github.com/JCSmillie/GatoriPad_DeploymentProcess_Presentation

