Journal 3 – Final Experience with distros on A70

Research – Saturday November 30th

Last time, I couldn't complete the ubuntu touch installation because of a missing 'vbmeta' image, that I believe I accidentally removed when I formatted every directory on the phone.

To fix this, I found out that each phone requires a different vbmeta image flashed on it, so I will try attempting that next time I get my hands on the phone.

If that doesn't work, I will move on to LineageOS. My worry, however, is that I'll encounter the same error.

<u>About LineageOS</u>

One of the published distros I found is on this link: <u>LineageOS .17</u> . But I think there are a few more tweaked versions that I can try whether I'm successful with the first one or not.

Since the install on the link I provided, who's install is <u>here</u>, is unofficial, we can expect some error, and gladly enough the dev posted most of them :

{

<u>Known issues</u>

1. Selinux permissive
2. VoLTE/VoWifi not working
3. Camera only shows up to 8MP
4. NFC is enabled on all models, even on the ones without it (please report device model)
5. Dualsim is enabled on all models, even on the ones without it (please report device model)
6. Screen flickering when using fingerprint (That's normal and how optical fingerprint sensors work. Flickering doesn't happen on stock I know, but that's due to poor UI implement from lineage site)
7. TWRP can't decrypt your data   }

Based on research, this is what it means:

1. Weakened system security.
2. Cannot make calls.
3. Reduced image quality (from pictures).
4. NFC feature appears even if the device doesn't support it.
5. Same for dual sim, the feature appears even if the device doesn't support it.
6. Cosmetic issue: screen flicker when using screen fingerprint.
7. Might encounter issues when trying to remove format phone, since TWRP won't have the same permission levels.

   As a last attempt, if none work, I can try crDroid, since it has higher chances of working, being a more custom ROM. (Didn't start with this one because the process is the same). But now enough research, time to get hands on.

So last time I was let with this screen:
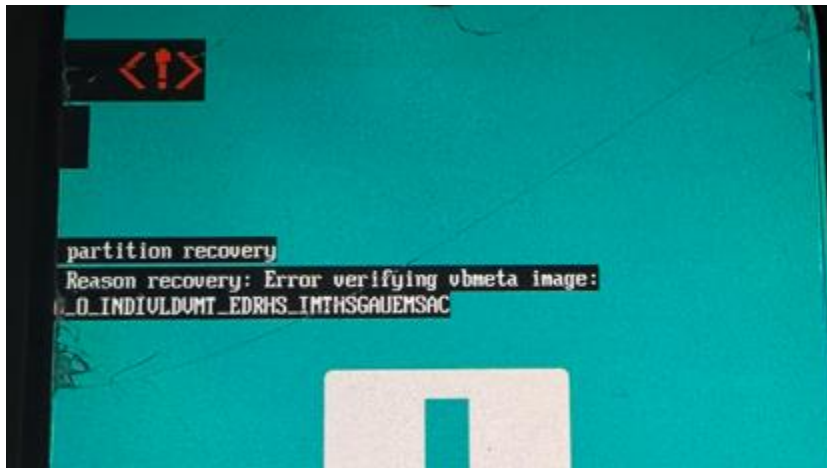
It froze this way until the battery died. To get out, simply press vol down + power, when off immediately press vol up + power to boot in TWRP.

So, first thing I'll try is to wipe the phone again once in TWRP, push the ubports image again (like in previous journal) but press a different additional option if it appears.

Ok well what I tried doing was looking to install a vbmeta image for the a70 that I found on different forms through TWRP, however the same error happened and I'm wondering if it's because of the contents of the zip file (has its own vbmeta file but it's not compatible).

WOW

I MADE IT WORK!!!

Ubuntu Successful Installation – night of Saturday November 30th

So, what I ended up trying is instead of flashing the vbmeta image with TWRP (inside phone), I used Odin again.

[I inspired from this website.](#)

1. First, I downloaded the vbimage.tar file from this [website](#) (where 'vbmeta.tar' is highlighted in blue).

2. Then I, with the phone connected to the pc by usb-c cable, I put the phone in download mode. I did it by pressing reboot>download in TWRP, but it can also be done by pressing vol up + power.

3. Then I opened odin.exe, made sure the phone was recognized in the ID:COM slot like done in journal 2, then put the file in the USERDATA file and turned off auto reboot in options like in the picture below. By putting it in that slot, the verification will be disabled for the whole system.
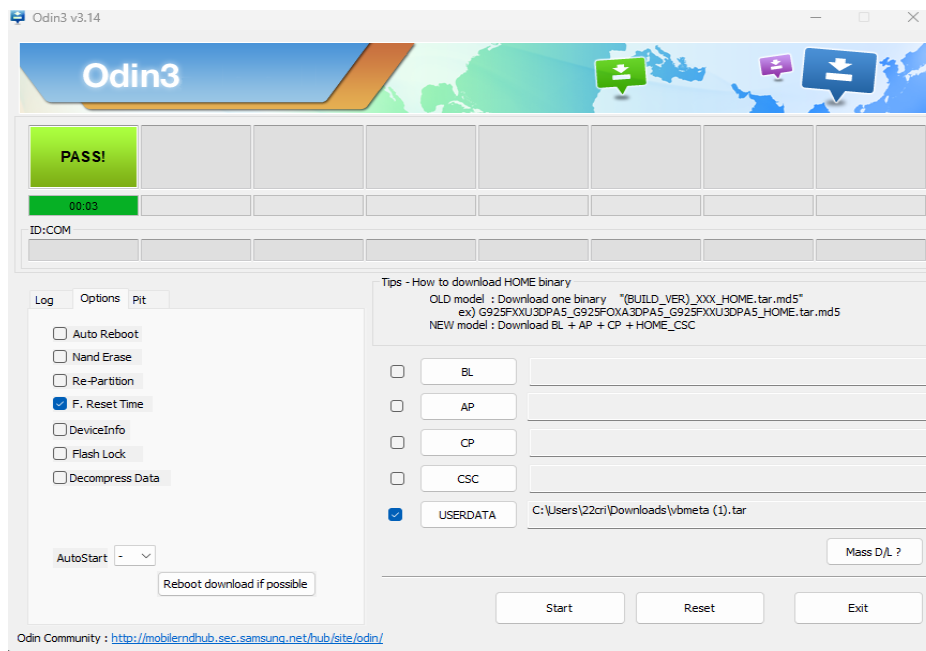
4. After that, I booted back into TWRP, flashed ubports.zip and rebooted (which hasn't been working for DAYS.)
   And amazingly this fixed the issue.
   To understand more why this happened, I asked chat gpt about the importance of the vbmeta image:

   The **vbmeta image** is crucial in the Android security structure, as it is part of the **Android Verified Boot (AVB)** system, which ensures that the operating system (OS) on your device has not been tampered with. It verifies the integrity of system partitions to ensure no unauthorized modifications are present.

   From my understanding, the vbmeta image is checked during the boot verification process to ensure the boot and partitions are unmodified, and if it triggers that it's triggered, the boot fails.
   When flashing the patched vbmeta image, I basically disable the verification, to stop triggering boot failure when using custom images.

   On other phones, I maybe could've flashed the vbmeta image with TWRP, but because of some uncertain limitations, I wasn't offered the option to flash the image in the vbmeta slot or user data partition.
   The reason Odin worked, is probably because Odin is Samsung-specific.

Testing out Ubuntu Touch on the A70 – Morning of Sunday December 1st

Before trying more distros, let me get a feel of ubuntu touch on this phone.
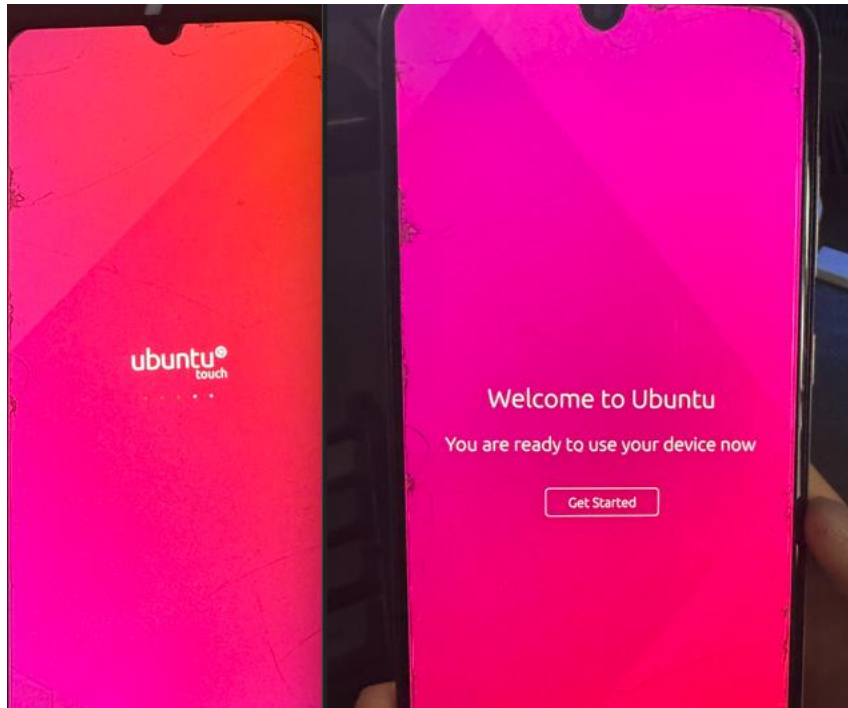
After clicking get started>English>time zone, I get to the home screen where they offer a tutorial. From a glance, the UI is very satisfying. When swiping left to login, I must enter "user" as a default password.
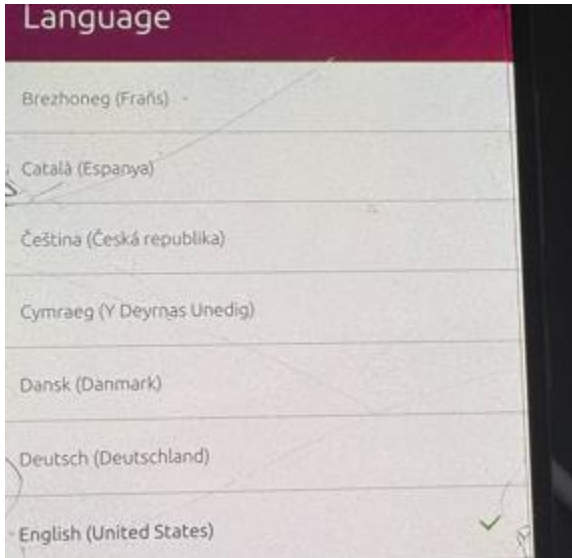
The software runs smoothly with absolutely 0 lag when exploring the phone. Pictures are decent, and features like the flashlight are responsive.

But for now, enough playing with ubuntu touch, and let's try another distribution.

LineageOS install – Sunday December 1st

1. First, I need to verify that I can go back into TWRP.
   After restarting the phone (through power button and ubuntu touch's restart), I pressed volume up and power until it successfully booted back into the familiar TWRP menu.

2. Now, I'll first prepare the phone.
   Using TWRP menu, go to wipe> advanced wipe > select all the mobile's partitions > swipe to wipe.

3. Once it's successful, download the .zip file for lineage OS from the link at the beginning of the journal, and push it to the phone using adb tool.

   ```
   PS C:\ADBFastBoot> ./adb push "C:\Users\22cri\Downloads\lineage-17.1-20200213-UNOF
   FICIAL-a70q.zip" /
   C:\Users\22cri\Downloads\lineage-17.1...6.1 MB/s (796245776 bytes in 21.056s)
   ```

4. Now, using TWRP go to install>root>press on .zip file > swipe to flash. When done, press reboot system and pray for the best ha-ha.

   ```
   Updating partition details...
   ...done
   Installing zip file '/lineage-17.1-20200213-
   UNOFFICIAL-a70q.zip'
   Unmounting System...
   Target: samsung/a70qxx/a70q:9/PPR1.180610.011/
   A705FNXXU5ASL4:user/release-keys
   Patching system image unconditionally...
   Patching vendor image unconditionally...
   Patching dtbo image unconditionally...
   Patching vbmeta image unconditionally...
   script succeeded: result was [1.000000]
   Updating partition details...
   ...done
   ```

   Wipe Cache/Dalvik   Reboot System

5. Amazing, lineageOS worked with no difficulty. I'm unsure if it's because I already unpacked the vbmeta image

Testing out Lineage OS .17 on the A70 – Sunday December 1st

Before trying one more and recording one or many tutorials, I want to try out the software.
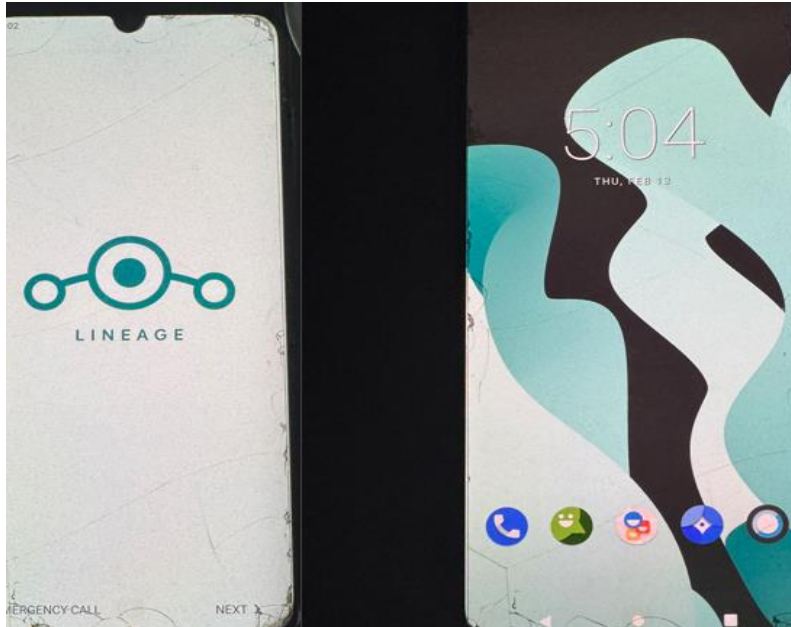
Like Samsung, apple and Ubuntu Touch, when the system starts, we are met with a starting up menu to choose the language and time zone. To be honest, it is a bit more user friendly than ubuntu touch.

After playing a bit with it, basic features like flashlight and camera work. The sound quality is nice, and the UI is extremely satisfying and user-friendly. You can tell ubuntu touch might be preferable to developers whilst this one is like Google's OS, very smooth and rounded for the average user.
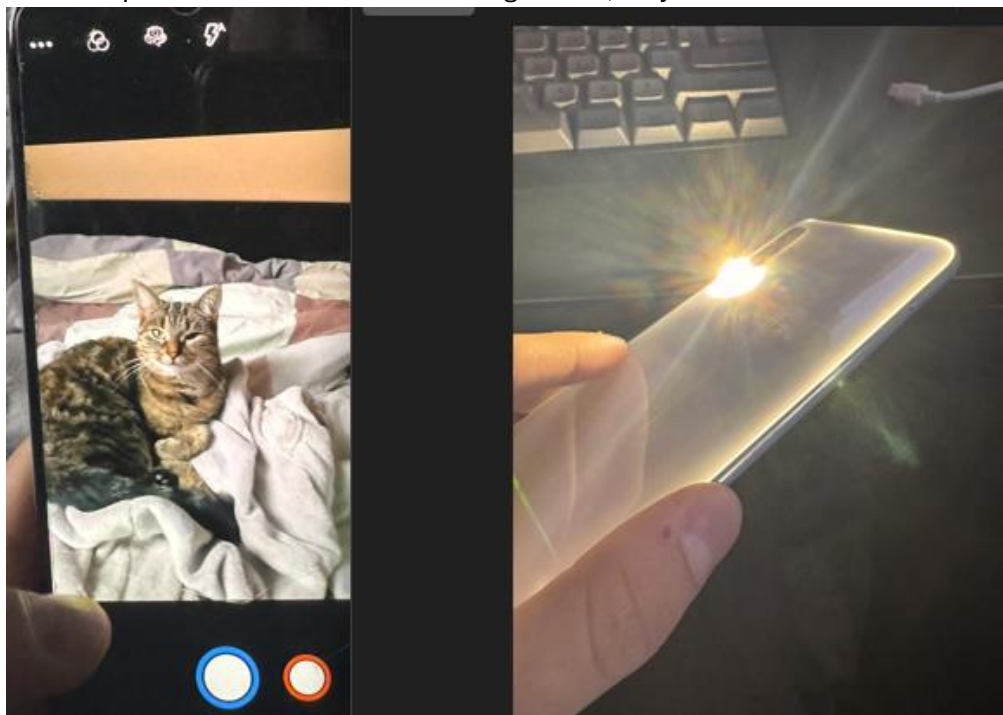
Cr Droid install – Sunday December 1ˢᵗ

Lastly, I'll be trying Cr Droid. I found this distro in the XDA forms again, and based on the comments people really like this one.

Again, I'll be using TWRP. Simple instructions (that I don't need since it's the same as lineageOS) can be found in this video.

Based on the form, the main known issue is the selinux being permissive (making the system more prone to malware). However, amongst the working issue, the screen fingerprint works, sim cards (one or dual), Bluetooth, and more. More features here. The dev is still active and releasing updates, so consider leaving a comment or donation if you use this install.

1. First, I need to verify that I can go back into TWRP.
   After restarting the phone, I pressed volume up and power until it successfully booted back into the familiar TWRP menu. (Again, phone must be connected to pc).

2. Now, I'll first prepare the phone.
   Using TWRP menu, go to wipe> advanced wipe > select all the mobile's partitions > swipe to wipe.
3. Once it's successful, download the .zip file for CR Droid from the link at the beginning of the section, and push it to the phone using adb tool. (Download is 1gb and taking a while for me rn).

The install took around 20 minutes. I wonder if it will take as much to transfer to the phone and to flash. IMO it is slow because of the service the dev used to share the file.
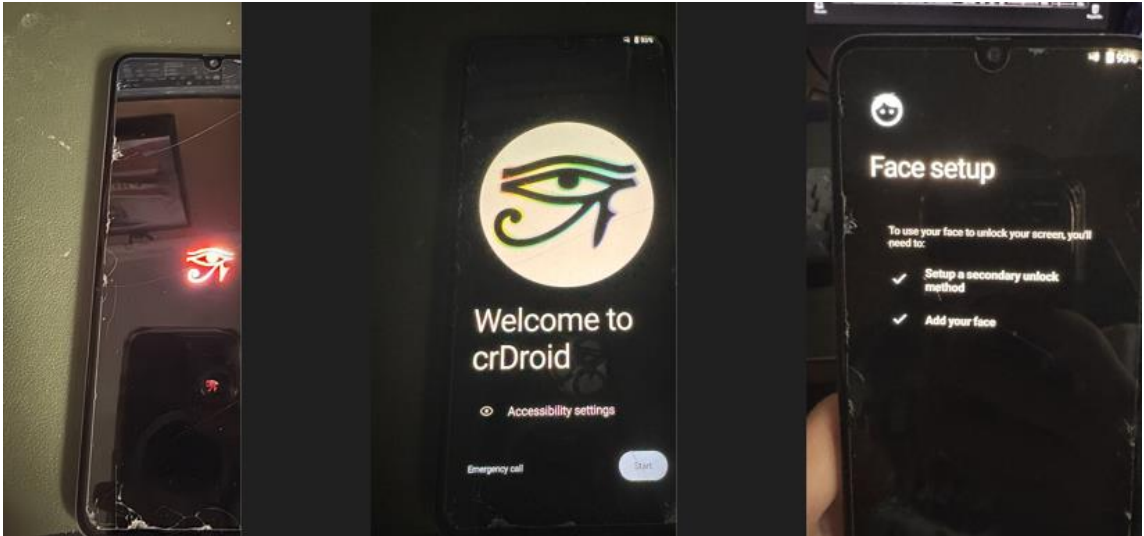
4. Now, push it to the phone using adb tool. Transfer is much faster.

```
PS C:\ADBFastBoot> ./adb push "C:\Users\22cri\Downloads\LinuxMobileDistros\crDroid
Android-12.1-20221127-a70q-v8.11.zip" /
C:\Users\22cri\Downloads\LinuxMobileDis...36.1 MB/s (1143803156 bytes in 30.255s)
PS C:\ADBFastBoot> |
```

6. Now, using TWRP go to install>root>press on .zip file > swipe to flash. Cool Design.
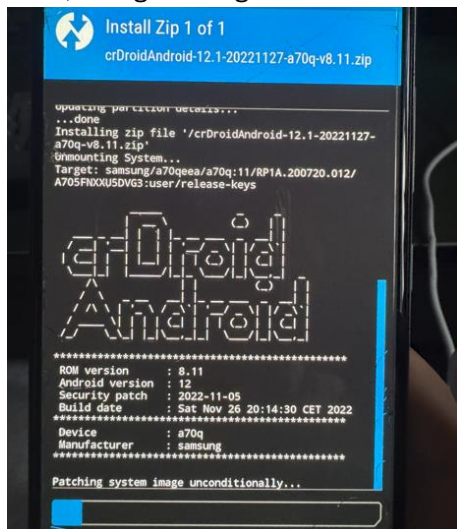
7. An additional step for this is to back to main TWRP menu, go wipe>format data>yes.

**8.** Now finally reboot system. Voila.

Testing out Cr Droid on the A70 – Sunday December 1st

Honestly, smoothest out of all. I could even say the UI is way better than generic Samsung/Apple versions. Very fast, everything works except of the security feature mentioned earlier.

BUT, in the comments of the form, a few people had issues where the password would somehow reset by itself when restarting the phone and couldn't get in. The dev said it was fixed and gave a new version (which is the one we installed). Now idk if I somehow triggered it, but when I restarted the phone, the password reset, and I couldn't login (had to factory reset).

What's cool is that you get a lot of options when pressing the power button for long. Specifically, the developer options are available very easily.
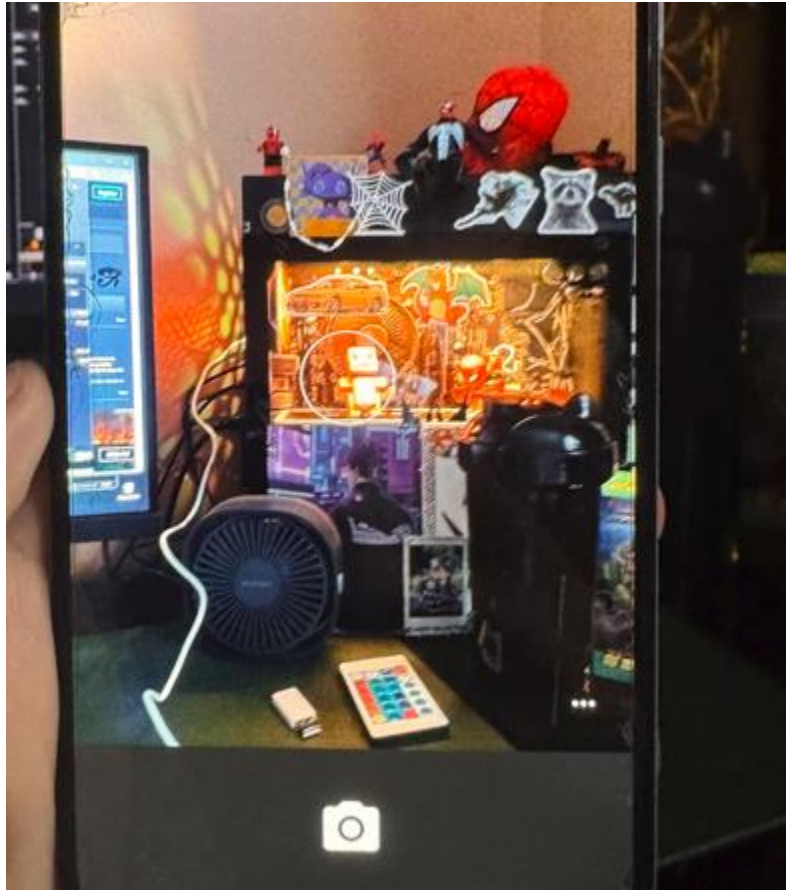
Conclusion And Reflection

Out of all the distributions I tried, CrDroid stands out as the smoothest and most user- and developer-friendly. It's incredibly fast, feature-packed, and supports critical functions like screen fingerprinting and more importantly phone calls. However, a major flaw is its handling of passwords: if the phone restarts (e.g., due to a dead battery), the OS can fail to decrypt your password, locking you out until a factory reset erases everything.

Ubuntu Touch and LineageOS are also fast but based on user feedback in forums (not my own experience), they don't support SIM calls. Despite these limitations, I was impressed by how functional these "unfinished" distros are, far exceeding my initial expectations.

Before we wrote our proposal, we thought it was going to be a challenge, but with a cool outcome. While we made our proposal however, we got the impression that all we need to do was to put the distribution installations on a SD card and it would do its thing. Oh boy, we were so wrong.

It was much harder than expected. I can at least speak for my side that the Samsung security features on the newer device (a70) were sabotaging everything. It was then I thought I either had to present an unfinished project or find a software that could do it all for me (doesn't exist anyways).

But I did it, after a lot of research and trial/error I found ways and I learned. Now if I ever decide I want to switch to more versatile security, I know how to flash a linux distro on a phone (it's fun too).

Lastly, we also initially expected to use popular distributions like Ubuntu Touch, NixOS, Mobian, Nemo Mobile, and PostMarketOS. However, the a70 was not compatible with any except for Ubuntu Touch. I did find a few other uncompleted distros that are less popular and follow UI close to Google/Samsung. Overall, it was a fun experience that surpassed my expectations and challenged me more times than I can count.

GitHub