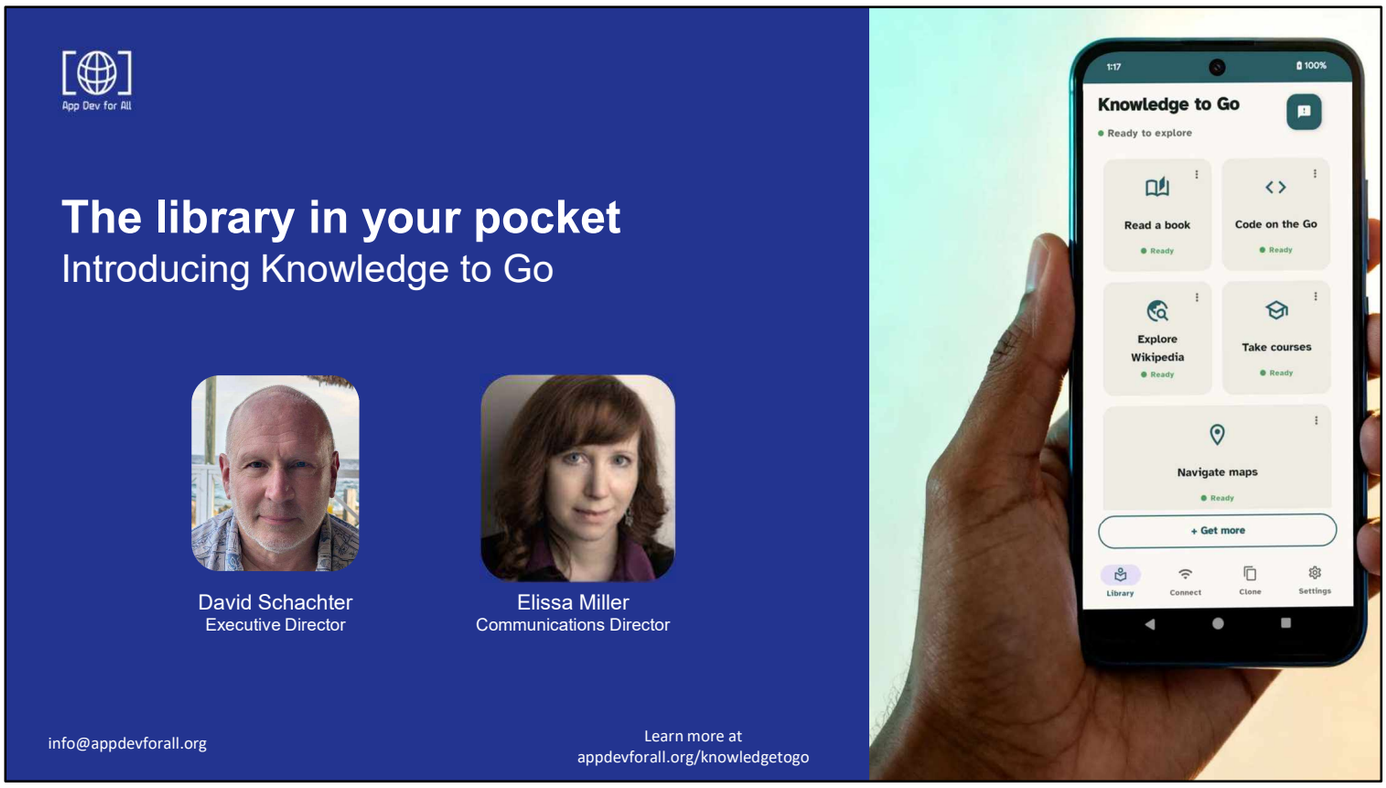


Again, thanks to everyone for joining us today. I'm Elissa Miller, communications director at App Dev for All, and I'm joined by David Schachter, the founder and executive director. We're introducing Knowledge to Go, an offline content server that runs on ordinary Android phones.

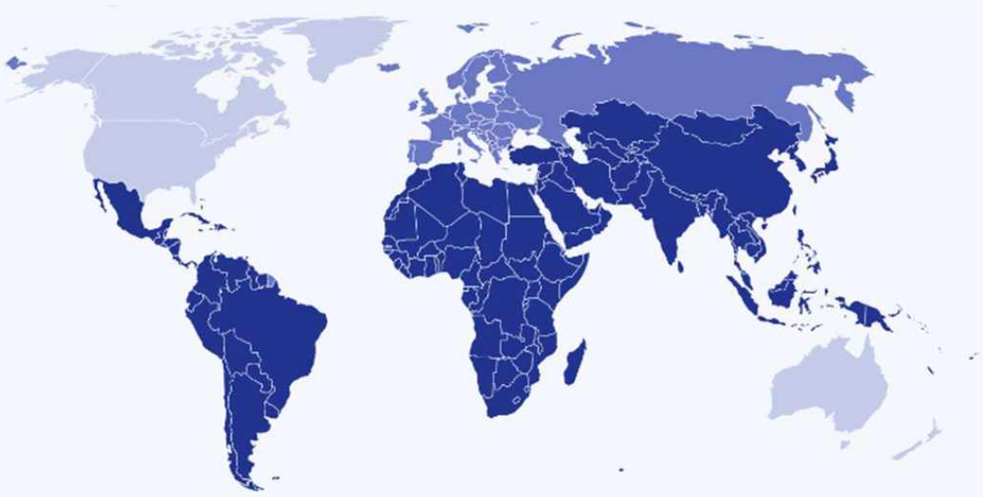
Let's take a step back and look at why we think Android is an important platform.

Android phones worldwide

95% India

87% Latin America

83% Africa



80%+ · Africa, Asia, Latin America 50–80% · Europe Under 50% · North America, Oceania

Android share of mobile devices, regional aggregates · StatCounter Global Stats, 2026

Basically, it’s everywhere. Billions of Android phones are used around the world.

There are Android phones in places where people don’t have reliable affordable internet access.

WHERE WE STARTED

Code on the Go

A mobile-first, offline-ready environment for building Android apps on Android phones without internet access.

With Code on the Go, you can:

- Build professional-strength apps offline
- Use developer tools previously unavailable on mobile devices
- Take advantage of features designed to streamline coding on phone screens

Code on the Go is free and open source.

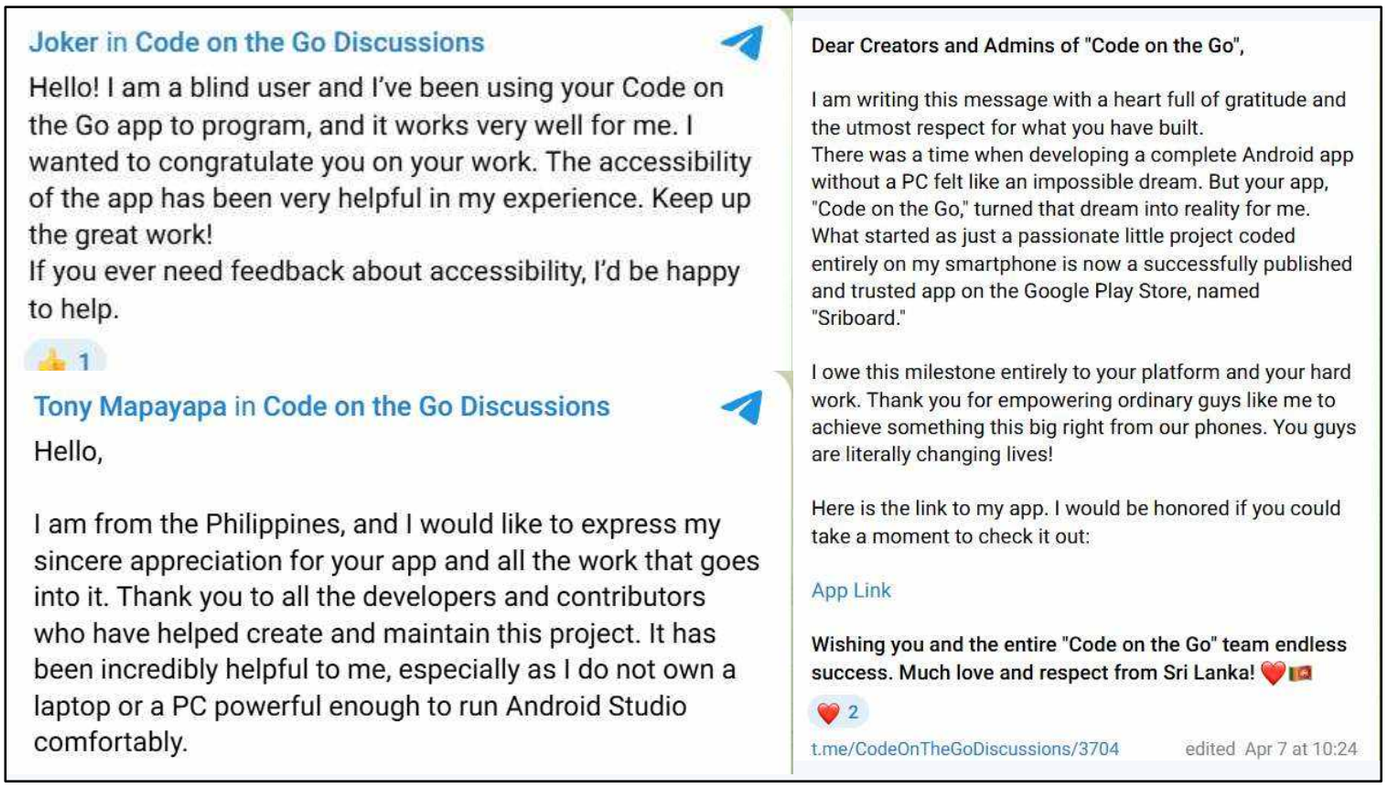
info@appdevforall.org

Learn more at
appdevforall.org/knowledgetogo

App Dev for All was founded to create Code on the Go, which is a programming environment that lets you build professional-strength Android apps on directly on an offline Android phone.

Our goal is to empower people who don’t have computers and who don’t have reliable internet access to be digital creators as well as consumers.

I know we don’t need to explain to this audience why offline tools are important. ☺



We officially launched Code on the Go at the end of April, and it's been taking off. We were just under 250,000 downloads at the end of last week. We have more than 4000 weekly active users, and on average their session times are longer than 45 minutes.

For us, the real measure of success isn't downloads—it's whether people can build apps with it. We're happy to announce that apps built with Code on the Go are already published on global platforms like Google Play Store and F-Droid. That means that Code on the Go and the apps you can build with are absolutely on par with apps created on powerful desktops.

The people using Code on the Go don't have computers, but they do have internet access.

The challenge was solving the last-kilometer problem, which is how do you get Code on the Go onto phones that aren't connected?

That's what led us to the Offline Internet Consortium, which has already led us to some great partnerships.

EXPANDING OUR REACH

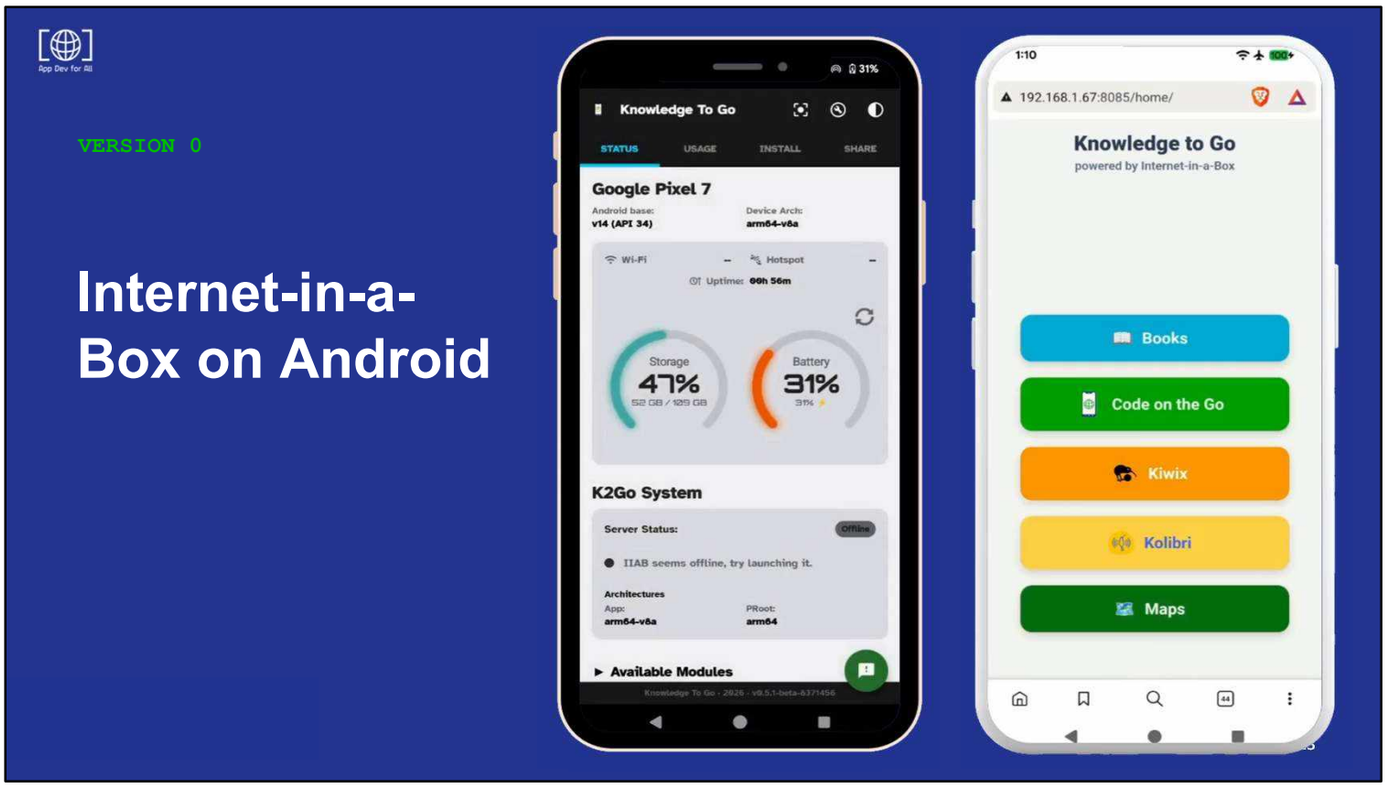
Code on the Go distribution

Starting in Q4, Kiwix is going to add Code on the Go to its ZIM library. And, Code on the Go is already available as an option on Internet in a Box.

Our working partnership with Internet-in-a-Box is what brings us here today.

In the office, we were setting up a Raspberry Pi with Internet-in-a-Box to make sure that you could download install Code on the Go from it, and setting up the server wasn't the easiest thing in the world. It required specialty hardware that we had to purchase, and it required technical expertise.

We also realized that people getting Code on the Go from Internet-in-a-Box have Android devices. What If we could also put Internet-in-a-Box on their phones so they can take those resources back to their homes and communities along with Code on the Go?



The partnership's first milestone was faithful port of Internet-in-a-Box to run on an Android phone. This may be a familiar set of screens to you. Internally, we called this "Internet-in-a-Box on Android."

This runs on Android phones, and you can get it from the IIAB GitHub repo. This was proof of concept that the idea works: You can serve offline content from a phone.

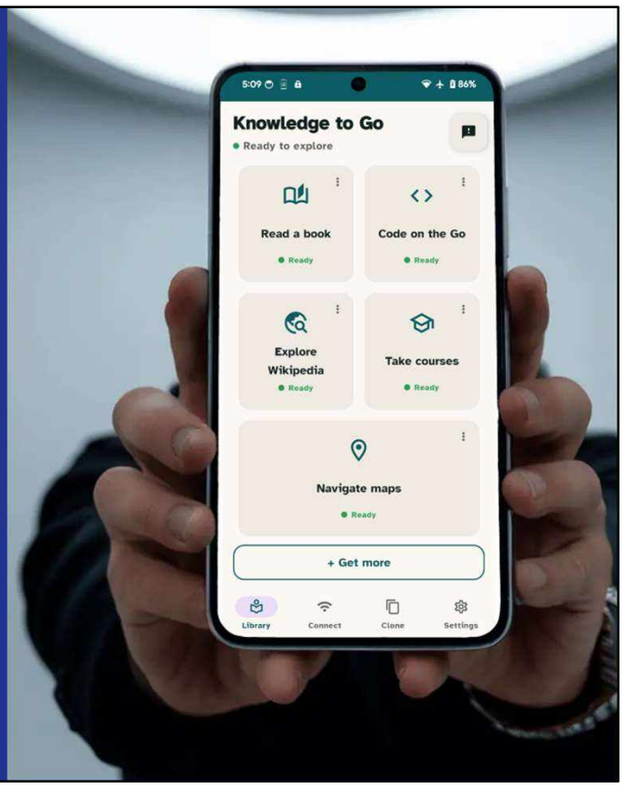
But, the setup was still challenging. To download content, you had to install a terminal emulator and type stuff into a command line, and just knowing what the phrase "terminal emulator" means assumes a lot of technical knowledge. I saw the phrase "You've "shelled into" PRoot Distro's low-level IIAB Debian CLI," my eyes glazed over.

So, after the proof-of-concept milestone, we realized that we could take advantage of Android's user interface features to make it really easy to set up and use.

VERSION 1

Knowledge to Go

- Runs on any Android phone, including legacy and inexpensive devices
- If local Wi-Fi isn't available, the phone automatically becomes a hotspot
- You can clone the library to another Android device without complex provisioning



And so, on the foundation of the Internet-in-a-Box port, we built Knowledge to Go. We designed it around three key principles:

It will run on just about any Android phone or tablet, including old 32-bit devices and the very inexpensive phones that are common in the Global South. Again, that's the great thing about Android. It's already out there.

If a local Wi-Fi network isn't available, Knowledge to Go automatically turns the phone into a mobile hotspot without any additional configuration. So, it's easy to share resources, even if the person holding the phone doesn't have much technical knowledge.

And, you can turn almost any other Android phone into a Knowledge to Go server with a couple of taps, without having to go online. That means anyone can take Knowledge to Go resources back to their community without needing additional hardware or internet access. And, then their phone can create more Knowledge to Go servers, and so on, and so on. Only the first phone in this chain needs to have internet access to get the initial content. After that, it can spread virally.

Knowledge to Go Demo

And now, it's demo time! On the left, I have a Pixel 7 that's running the Knowledge to Go server, and on the right, I have a OnePlus 6T that's going to be the client. The 6T was built in 2018, and it was a pretty good phone back then, but eight years later it's generally obsolete. As you can see in the upper-right corners, I have airplane mode enabled on both of them. Wi-Fi is turned on but neither of them have internet access.

Let's say I want to browse content from the other phone.

1. On Pixel, tap Connect. There are two QR codes here: One connects you to the local hotspot, and the next one connects you to the library. If your camera doesn't have a scanner function, you can use any QR scanner app or you can manually connect to the hotspot.
2. So, I'll scan the first code….and tap the path until it says I'm connected.
3. Then I go back to the QR code scanner and I scan the link to get to the library.
4. Now I'm browsing the library on the second phone. I can look at any content on the K2Go server phone.

Getting new content from the internet obviously requires a connection to the internet. Assuming you have an internet connection:

1. Tap Get More
2. Navigate around and choose the kind of content you want
3. Tap Add to selection
4. You can browse any content type and add more
5. When you're done, tap Review selection. You can see everything that it's going to download.
6. Tap Start Download. I'm NOT going to tap it because I'm still offline. What happens is the download gets started. Once it starts, you can run the download in the background and keep using the phone.

The last thing I want to show is turning another Android phone into a Knowledge to Go server, without needing to go online.

1. Tap to get back to the main page
2. At the bottom, tap the Clone button.
3. This is the sending phone, so tap Send to another phone.
4. On the receiving phone, I'm already connected to the same network from the earlier connection, so I can go right to the QR code for the download.
5. Scan the code – it asks me to approve downloading the app.
6. After a bit, the APK will be downloaded. You run through the installer to set up the K2Go server.
7. After you install the APK, point it at the sending phone to copy the content.

ANDROID IS AN OPTION, NOT A REPLACEMENT

Potential drawbacks

	RPi / Linux / custom devices	Android phone
RAM, processor, storage	**May be more powerful**	May be limited
Battery/duty cycle	**Designed to act as 24/7 servers**	Not designed for nonstop use
Connectivity	**May support multiple connections**	Caps number of connected devices
Dedicated appliance	**Only job is serving content**	Phones may still need to be someone's phone

We are not suggesting that Knowledge to Go replaces any of the other great offline content services. Using a phone as a server has some technical limitations and drawbacks.

First, some server boxes are more powerful than phones. And, if people are using old or very inexpensive phones, the amount of content they can install is pretty small.

Phones are built for intermittent use, not sustained 24/7 load. Continuously running one as a server (especially plugged in and charging nonstop) degrades battery health over months. And, fun fact, the Android OS is actively designed to kill background processes to conserve battery, which is the opposite of what you want a server to do. We have a watchdog service running that keeps K2Go live but that also drains battery.

If you're using the built-in hotspot, there are connectivity limits: Android's built-in hotspot/tethering mode caps the number of simultaneous connected devices at around 8–10 depending on the phone and OS version. But, a Pi or a Linux box running its own access point software doesn't have that kind of ceiling. That makes a difference if K2Go is meant to serve a full classroom or community space rather than a handful of people.

Finally, a box is a dedicated resource. The reason there are so many Android phones out in the community because they are being used AS PHONES. They already have a job and a purpose, and someone might need to take the phone because they need to use the phone.

So we know that Android isn't a perfect solution for an offline content server. But for the billions of people who don't have access to a server and want to bring Wikipedia and Kolibri and Maps and Code on the Go home with them, Knowledge to Go can fill an important gap.

WHY ANDROID IS AN IMPORTANT PLATFORM

Key benefits

	RPi / Linux / custom devices	Android phone
Acquisition costs	Purchase, shipping, customs	**Already deployed worldwide**
Setup	Flash image, set up network	**Install app, download content**
Skills needed	System/server administration	**None**
Backup battery	Additional costs	**Part of the device**
Update content	Travel with the server	**Already in your pocket**
Create a new server	Set up another box	**Share to the next phone**

Again, to recap the benefits of the Android platform.

Acquisition costs are low because you can use phones that are already in the field. There's also a discussion to have about potentially repurposing the billions of phones that people have in their junk drawers, so if you know a person or organization we should talk to, please let me know.

Setup on Android is easy and you don't need technical expertise, so you don't have to worry about IP addresses or netmasks or imaging a disk.

Like any phone, Android phones have a battery. That means it can keep serving content when the power goes down.

Updating content can be easier, because it's just easier to put a phone in your pocket than to pack up a server and travel with it.

And, again, you can transfer the Knowledge to Go app and content to another phone without needing more hardware. The cloning process is so easy that you could, theoretically, drive around a region setting up Knowledge to Go everywhere you visit.

EXPANDING OUR REACH

Next steps

- We’re actively building the next release. What did we get wrong? What did we miss?
- How do we get Knowledge to Go into the field?
- What can we do with Code on the Go?

We’re already working on the next release. In addition to improving stability and resilience, we’re going to improve large file transfers, and we’re adding my favorite new feature, which is letting new devices choose which content to install. Right now, it does a complete clone, and if you don’t have enough space on the receiving phone, you’re out of luck. I

We’re also working on created packages of bundled resources, like Medical Knowledge to Go, which would install Wiki Med and biology content from Kiwix and Osmosis.org from Kolibri and other related resources so if you have a specific goal, you don’t have to go and find the resources yourself in the list.

That’s what we’re working on, but I want to wrap this up with a request for your help. App Dev for All is pretty good at building software, because three years ago we were all working in tech companies, not in the field. We don’t know your constituents. You do. We don't have the relationships you have. Essentially as software nerds, we’ve built something that we think is useful, but only you can tell us if that’s true.

So, we’re asking you to please:

Tell us what we should build next. If there's a feature or a package that would make Knowledge to Go useful in your work or your world, we want to hear it.
Tell us who we should be talking to — is there a school, a clinic, a community group, a local or regional nonprofit that could use this?
Can we help your organization meet your goals? For example, would it be useful to distribute Knowledge to Go with your offline resources so folks with Android phones can take the content home with them?
What else should we do and not be doing?

Finally, looping back to the start of the webinar—we got into this because we wanted to distribute Code on the Go. If you’re interested in teaching and learning programming without needing computers or internet, please reach out.

We’re building new features specifically to support offline teaching—for example, if you’re teaching somewhere that doesn’t have a big TV monitor to show the class how to do something, Code on the Go lets a teacher mirror her Code on the Go screen to all of the students’ devices at the same time. I’m hoping that the Consortium will have us back in a few months to show what’s new in Code on the Go.

EXPANDING OUR REACH

Try it out

- Get Knowledge to Go: appdevforall.org/knowledgetogo
- Get Code on the Go: appdevforall.org/codeonthego

App Dev for All

Keep Android open!

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Executive Director
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Elissa Miller
Communications Director
Elissa@appdevforall.org

And that's it for the presentation! Thanks for being here, and please visit keepandroidopen.org and sign the petition.

Get the app at:
https://www.appdevforall.org/knowledgetogo