

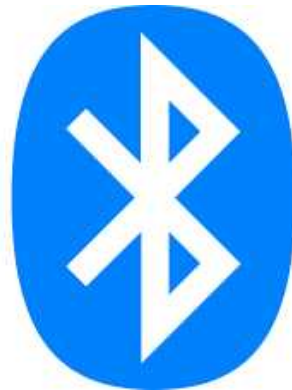
# Bluetooth and Pairing

A Learn in 30 Presentation

By John Krout

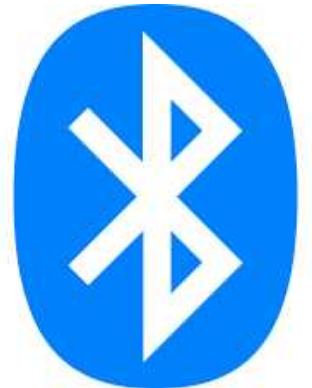
For PATACS + OPCUG

January 21, 2023



# What is that name Bluetooth?

- Bluetooth tech originated in Denmark.
- The engineers named it for a 10<sup>th</sup> Century King of Denmark, famous for uniting Denmark and Norway.
- Obviously, that union did not last.
- The king's nickname was Blutooth.
- The Bluetooth logo is a superposition of H (✖) and B in Runic characters.  
H was for Harald, the king's first name.



# What does Bluetooth do for you?

- Bluetooth lets one device communicate with another wirelessly.
- An alternative name considered for the tech was Personal Area Network (PAN).
- In the era of digital audio, Bluetooth became popular for playing smart phone audio on wireless earbuds and for conducting phone calls on a wireless headset.
- Today Bluetooth can do a lot more than that.

# Two important features of Bluetooth

- Bluetooth is specifically designed to work with devices, such as earbuds, Tiles and Airtags, that have a very minimal user interface, such as a single button.
- Bluetooth is specifically low range and secure, so that your use of it does not interfere with Bluetooth used by a seatmate on Metro or a plane.

# Pairing

- Pairing refers to the effort of introducing a phone, tablet or computer to another Bluetooth-capable accessory device, so that the two devices are prepared work together.
- You have seen Bluetooth-capable devices in prior presentations: the **BlueDriver** On-Board Diagnostics module for cars, and **Tiles and Airtags** for tracking your stuff.
- In January 2023, CNN ran a news story about a woman whose luggage was stolen. She ***identified the thief*** because her luggage contained an AirTag and she watched the AirTag move around on a map.

# Agenda

- The analogy of stages in starting a new job.
- The stages of making a Bluetooth-capable phone work with a Bluetooth-capable accessory.
- See Android and iPhone steps and screens for connecting to a portable speaker.
- Bluetooth is a major feature of recent car stereos, and not just for music.
- Obtain a Bluetooth-capable transceiver for use in an older car with no Bluetooth-capable car stereo, to satisfy hands-free driving laws.

# **Part 1. The Analogy**

# The Stages analogy

The process of preparing two Bluetooth-capable devices to work together is much like *starting work for a new employer*.

- Stage 0: You don't know anybody at the new job.
- Stage 1: **Introduction** to co-workers.
- Stage 2: **Establish working relationships** with co-workers. Collect their roles, room numbers, phone numbers and email addresses.
- Stage 3: **Collaboration**: Getting useful work done with one or more co-workers. May be intermittent.



# Stages of Bluetooth

- **Stage 0: The status quo.** Your smart phone does not know of any nearby Bluetooth-capable devices.
- **Stage 1: Discovery (Introduction).** Make a nearby Bluetooth-capable device Discoverable. Use your smart phone to Discover that device.
- **Stage 2. Pairing (establish relationships).** Save knowledge of the discovered device in your smart phone so you can use the discovered device when needed.
- **Stage 3: Connection (collaboration).** Use your phone to activate a paired device so your phone and that device can work together.

# Discovery roles

- During discovery, one Bluetooth device takes the role of **Discoverer**.
- Usually this Discoverer device is a phone, tablet or computer with a functional Graphical User Interface (GUI), so it can display any Bluetooth device it discovers.
- Another Bluetooth device takes the role of **Discoverable**. This often requires the Bluetooth device to provide only a button to enable Discoverable mode in the device.
- Some discoverable Bluetooth devices go into Discoverable mode for a short time when turned on.

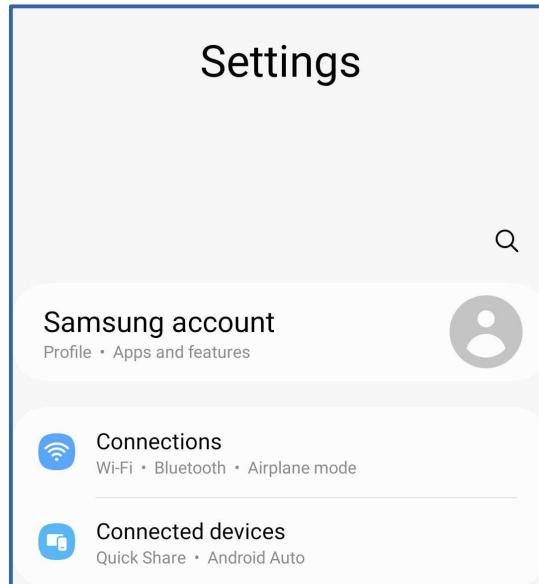
# A tip about the Pairing Stage

- For extra Security, some Bluetooth-capable devices provide a numeric security code to you while acting as Discoverables.
- Those devices can be Discovered by your phone.
- Speakers and car stereos might announce a **security code**. Devices with displays may display a security code.
- If a security code is provided, then your phone will prompt you to enter that security code.
- The bottom line for most Bluetooth accessories is this: **READ THE INSTRUCTIONS.**

# **Part 2. Android example**

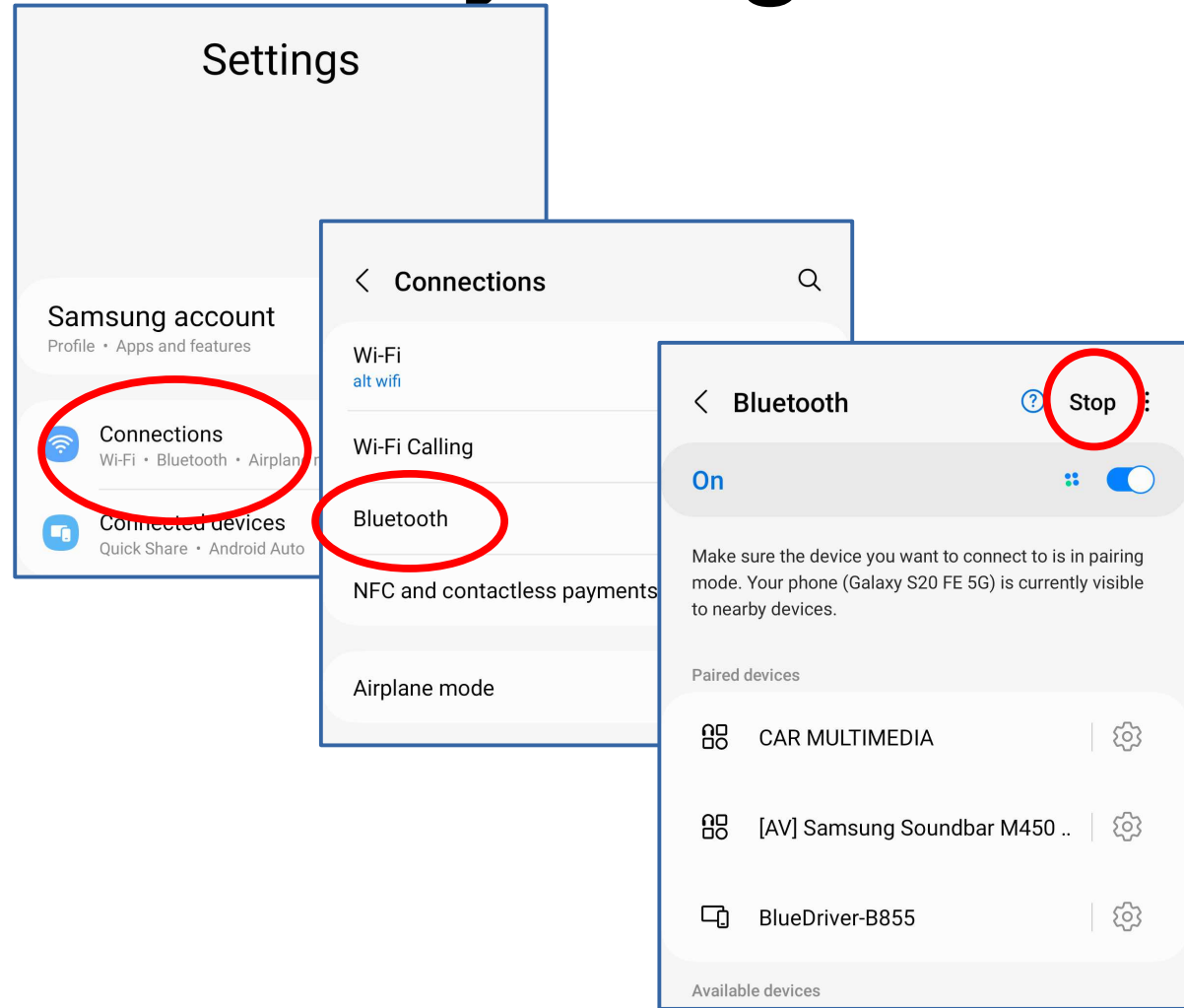
# Android: The Stages

- Screens and steps are illustrated here using a Samsung Galaxy 20 FE running **Android 13**.
- It all starts by opening the **Settings App**.



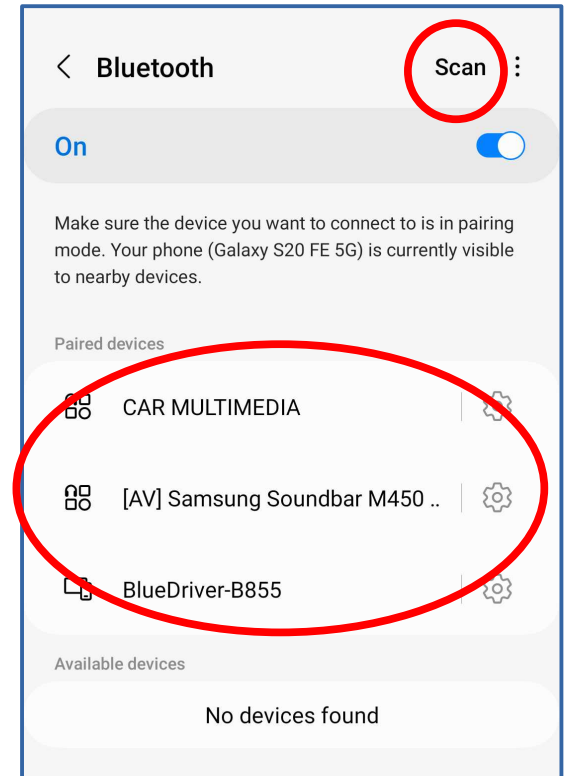
# Android: Discovery Stage

- In the Settings app, tap **Connections**. The **Connections screen** appears.
- In the Connections screen, tap **Bluetooth**.
- The **Bluetooth screen** appears and makes the phone discoverable.
- Tap the **STOP** button.



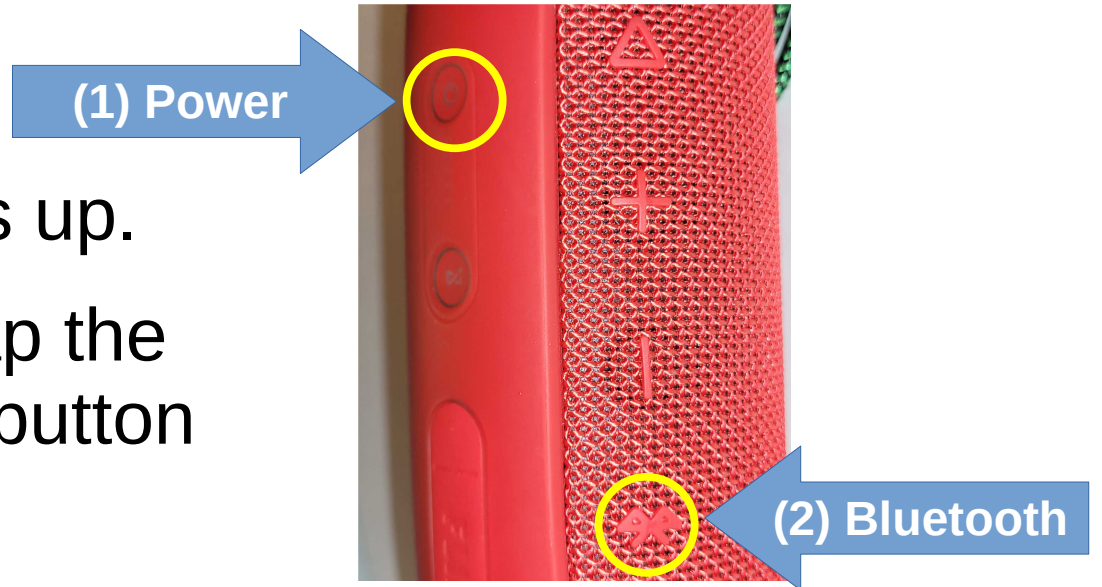
# Android: Discovery Stage

- The Bluetooth Screen replaces the STOP button with a **SCAN** button.
- Devices you have previously Discovered and Paired, if any, are listed on the Bluetooth screen.
- To Discover a nearby Bluetooth-capable device, make sure the device you want to Discover is nearby, turned on and is Discoverable.



# Discoverable Device example

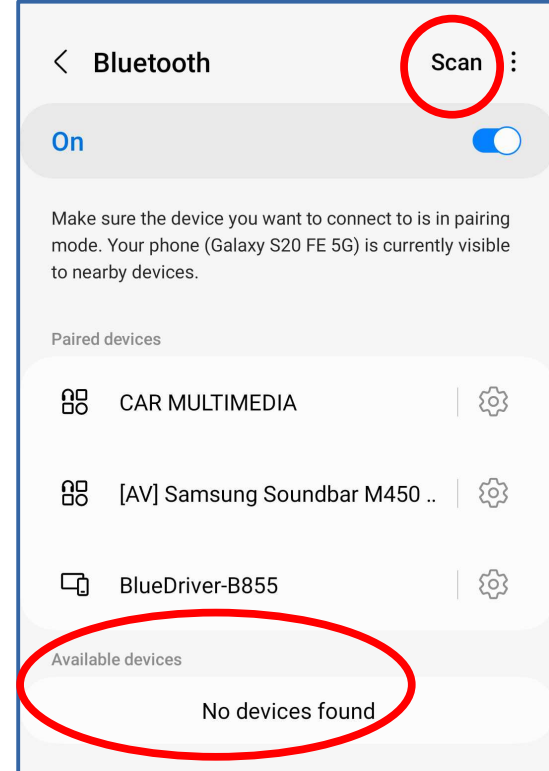
- JBL Flip 4 portable stereo speaker
- Has speaker at each end of cylinder.
- Has (1) a power on/off button and (2) a Bluetooth Discoverable mode enable button.
- Turn it on: long-press the Power button. It lights up.
- Make it **Discoverable**: tap the Bluetooth button. Power button blinks blue.





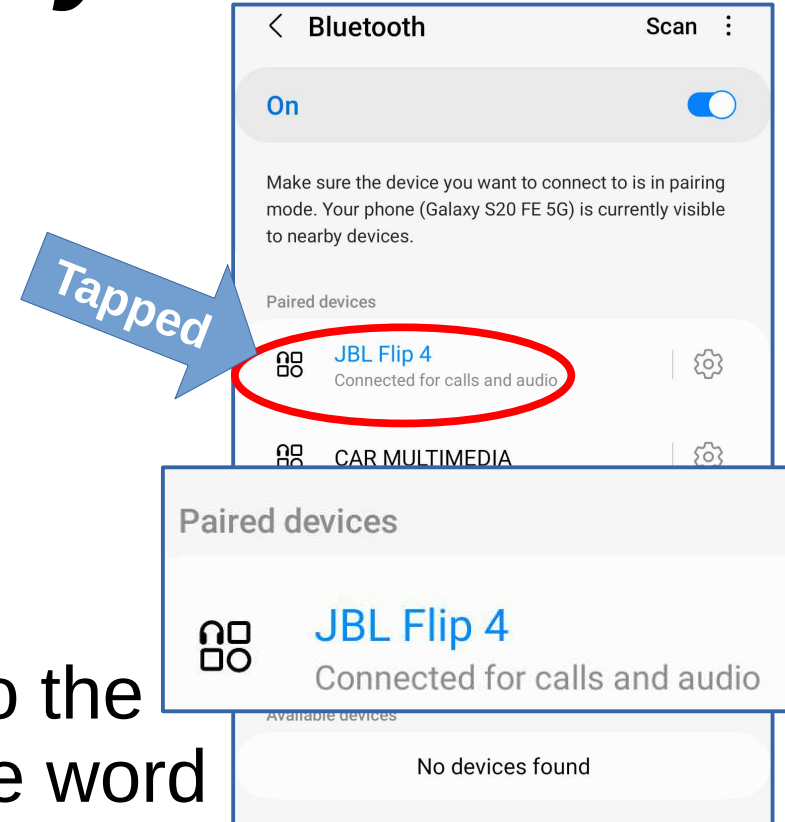
# Android: Pairing Stage

- On the phone, tap the **Scan** button.
- Newly discovered nearby Bluetooth devices are listed as **Available devices** below the Paired devices list. If the Paired Devices list is long, then scroll down to find **Available devices**.
- When the Discoverable device is listed in Available devices, you can add it to Paired Devices by tapping its name.
- That same tap will also **Connect your phone and the device, so you can use the device immediately.**



# Android: Connect Stage for a device *already Paired*

- To connect the phone and a nearby Paired device in the Paired Devices list, turn on the Paired device.
- In the Paired Devices list, tap the device name. The word **connecting** appears below the device name.
- If the Paired device connects successfully, then its name moves to the top of the Paired Devices list and the word **Connected** appears below its name.



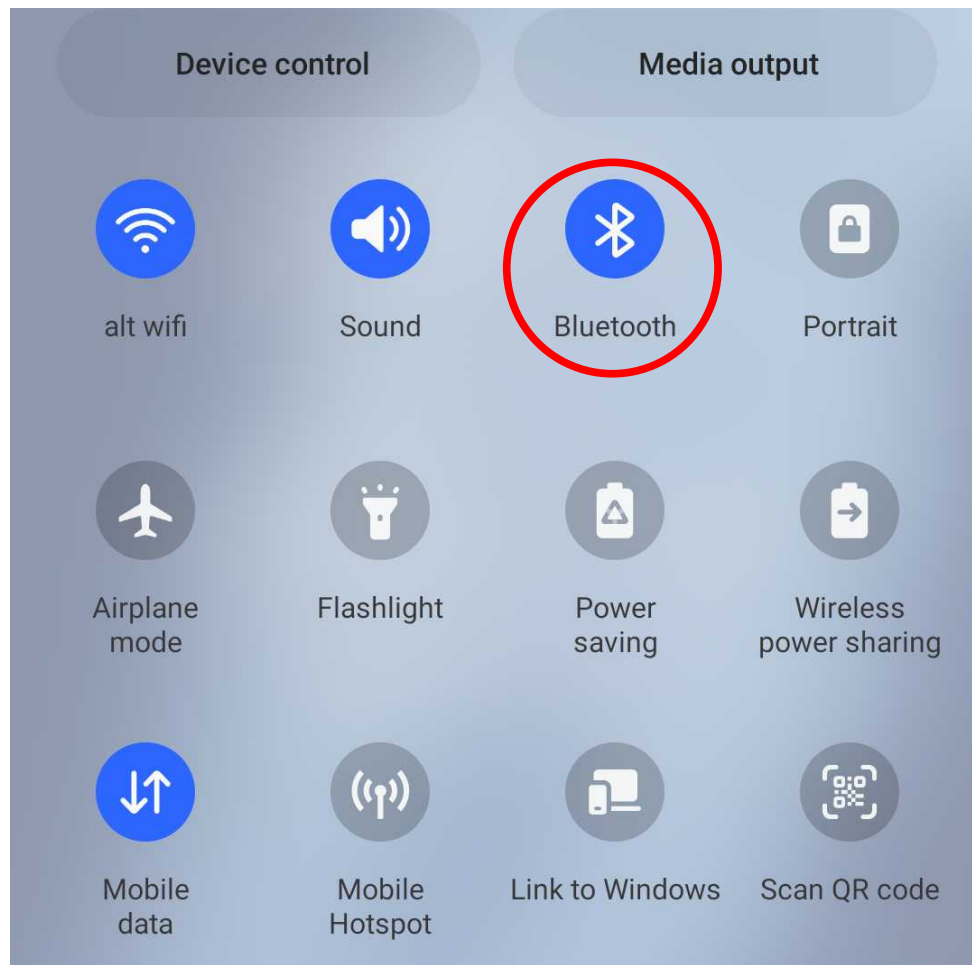
# Android: Disconnect

**Three alternatives. Any one does it.**


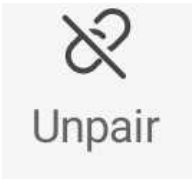
- **Distance Method:** Take your phone and walk away from the connected accessory device. Distance required depends on the connected device.
- **Phone Method:** Settings → Connections → Bluetooth. Tap the Bluetooth switch to turn it off. You can also pull down the Shade menu and turn the Bluetooth switch off/on.
- **Accessory Device Method:** On the connected accessory device, turn off power.

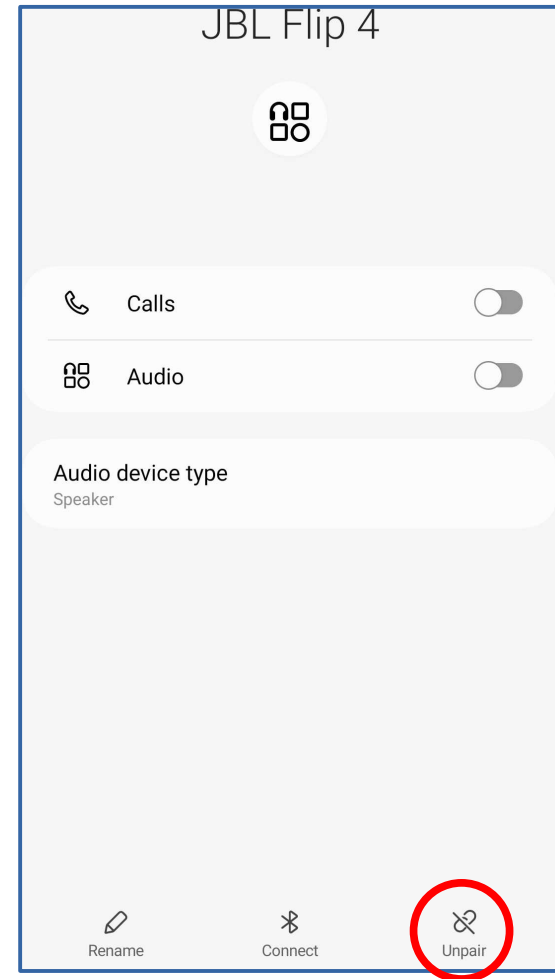
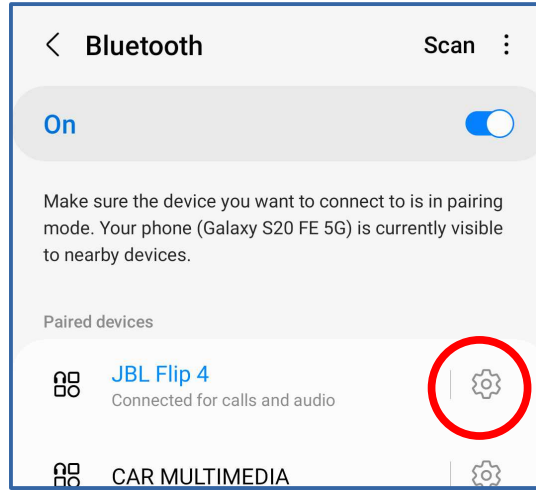
# Android: alternative Disconnect

- Pull the Shade Menu all the way down, and tap its **Bluetooth button** to turn Bluetooth off/on.
- This works even in the Lock Screen.



# Android: Unpair

- In Settings, tap Connections. The **Connections screen** opens.
- In that screen, tap Bluetooth. The **Bluetooth screen** opens.
- In Bluetooth, tap the **Gear icon**  to the right of the connected device name. The Device screen opens.
- In that screen, tap **Unpair**  in the lower right corner.



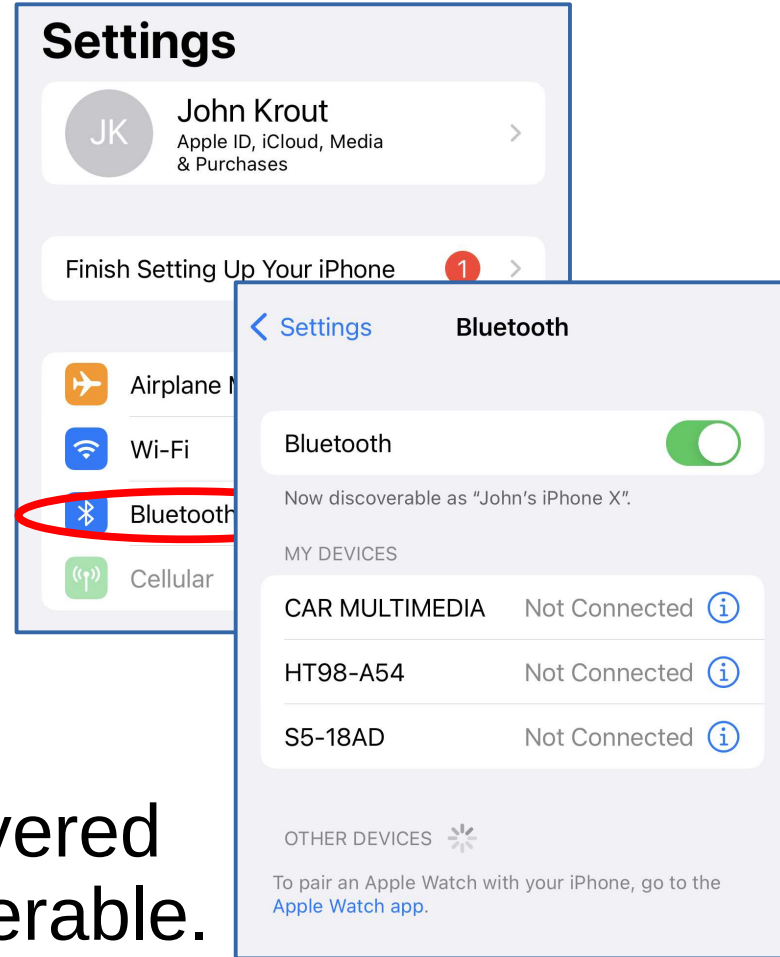
# **Part 3. iPhone example**

# iPhone: The Stages

- These steps were documented and screens were captured using an iPhone X running **iOS 16.1**.
- It all starts by tapping the **Settings app**.

# iPhone: Discovery Stage

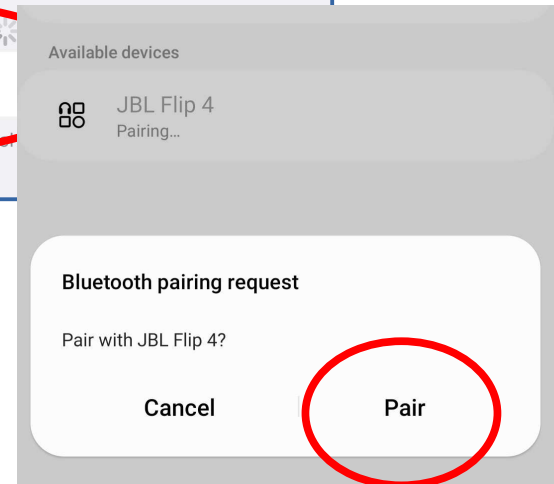
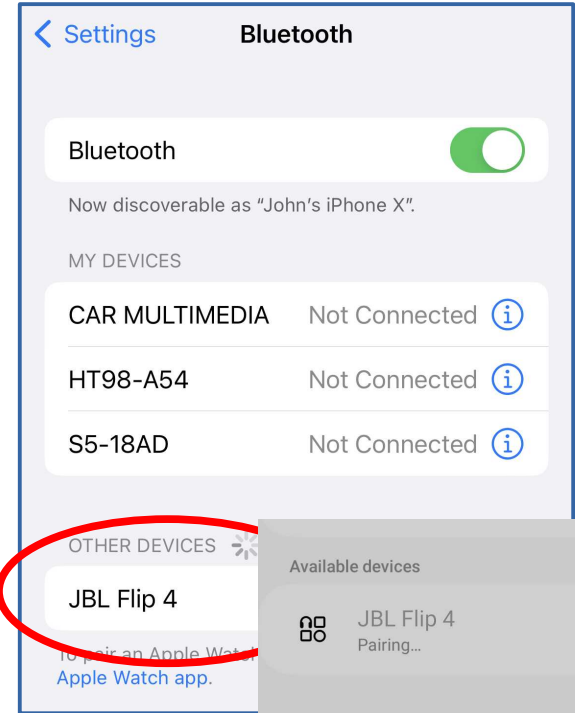
- In the Settings app, tap **Bluetooth**. The **Bluetooth screen** opens.
- Any previously-paired devices are listed below the **MY DEVICES** heading.
- The iPhone manages to be both Discovering and Discoverable at the same time.
- Make sure your device to be discovered is nearby, turned on, and is Discoverable.





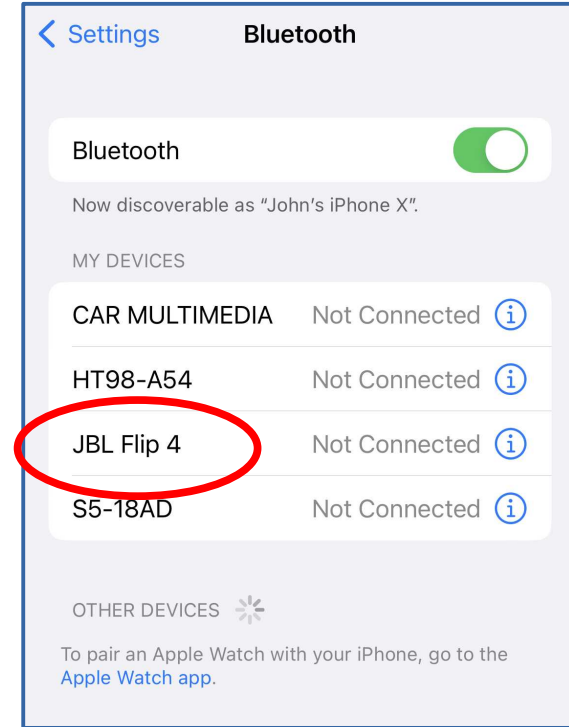
# iPhone: Pairing Stage

- When the nearby Discoverable device is discovered, its name will be listed under **OTHER DEVICES**
- To pair with the nearby Device, tap its name.
- A popup appears. In the popup, tap **Pair**.
- Its name moves to **MY DEVICES**.
- The newly paired device is also **Connected** to iPhone immediately.



# iPhone: Connect Stage for a device *already* Paired

- Open **Settings**. Tap Bluetooth. The Bluetooth screen opens.
- Make sure the desired device is nearby and turned on. If necessary, activate its Bluetooth feature.
- In the Bluetooth screen, under MY DEVICES, tap the device name.
- If connected successfully, then the device status changes from **Not Connected** to **Connected**.



# iPhone: Disconnect

Three methods. Any one will work.

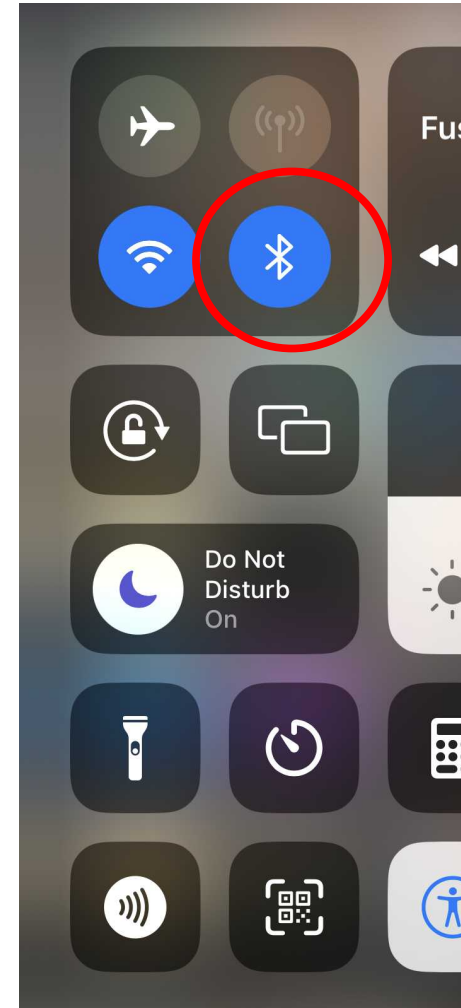
- **Distance method:** Take your phone and walk away from the connected device. Distance required is dependent on the connected device.
- **Phone method:** In **Settings**, tap **Bluetooth**. In the Bluetooth screen, tap the Bluetooth switch to turn it off.
- **Connected device method:** turn off power on the connected device.

# The iOS 16 Technique

## Another way to turn off/on Bluetooth

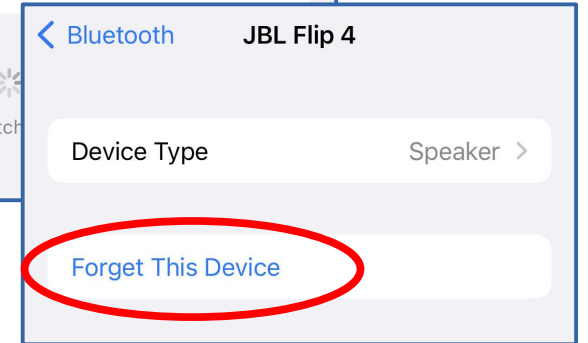
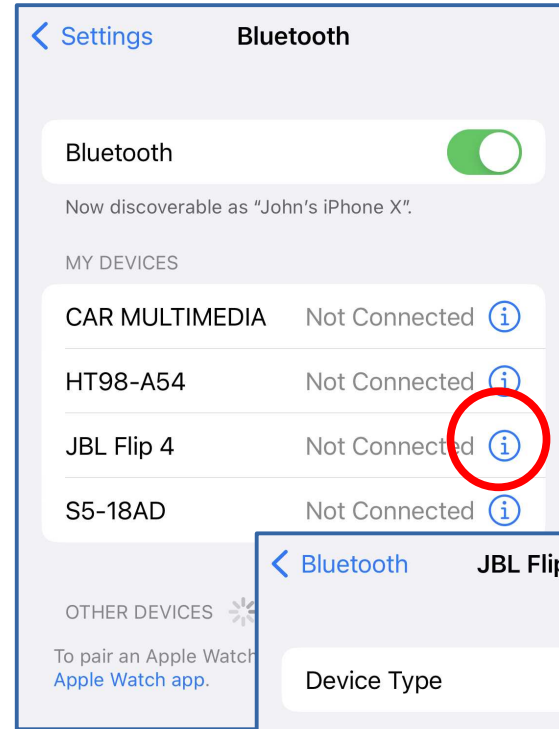
In the **Home Screen**, open the **Control Center** by dragging the screen's upper right corner to to the screen center.

In Control Center, tap the **Bluetooth button**.  
When on, the button background is blue.  
When off, the background is white.



# iPhone: Unpair

- In Settings, tap Bluetooth. The **Bluetooth screen** opens.
- In the Bluetooth screen, tap the **i** icon to the right of the paired device name. **The Paired Device screen** opens.
- In the **Paired Device** screen, tap **Forget This Device**.



# **Part 3. Cars and Bluetooth**

# Car stereos and Bluetooth

- Car stereos can accomplish many things by working together with your phone.
- Selecting the car stereo Bluetooth input puts the stereo in Discoverable mode, so your phone can discover it.
- The car can play music and phone calls.
- The car may not have a microphone. To be heard on a call, you must pull your phone out of your pocket/purse.
- If the car has a display screen, then the car may be able to announce incoming calls, and even incoming text messages, on the screen.

# Apple Auto and Android Auto

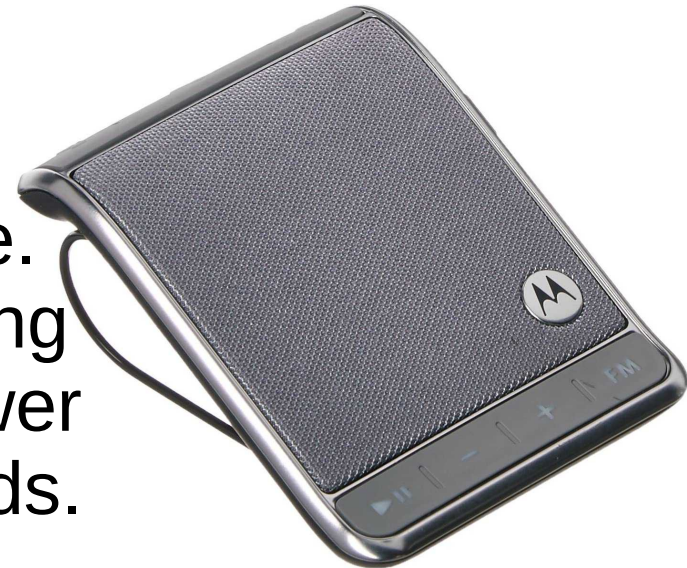
- Cars equipped with these advanced systems also allow you to use phone apps via the car's display screen.
- That can provide you a bigger display of Google Maps or other navigation apps.
- I do not expect you to rush out in a car-buying frenzy for these advanced features alone.



# For an older car

If your car stereo does not have a Bluetooth capability, then you still have useful device options. These contain batteries and can be charged via USB power.

- **Car GPS units can be paired with your phone**, and often include Bluetooth capability and a speaker and a microphone.
- **Speakerboxes**, far less costly than a car GPS, can be paired with your phone. The Speakerbox may announce incoming calls and give an option to choose Answer or Ignore by speaking one of those words.

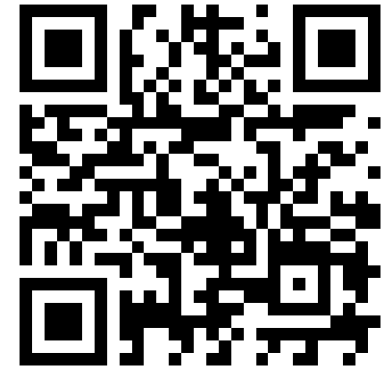


# APCUG Wednesday Workshop

January 25, 2023

- I will deliver an encore presentation of **GOING PUBLIC WITH GOOGLE CALENDARS**
- You must register in advance to obtain Zoom details for this meeting. The registration link was distributed by email on Jan 15:

<https://forms.gle/Vrr7faFZ2wVQuTcXA>



**Save Now, Scan Later**

Windows: **Win+PRTSCR** (PrintScreen)  
Saves to Pictures/Screenshots

Macintosh: **COMMAND+SHIFT+5**  
Saves to Desktop

**THE END**