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# Chapter **1**

# Getting to Know Apple Vision Pro

**A**pple Vision Pro is the most exciting new Apple product in years — perhaps decades. And it's easily the most ambitious. Apple Vision Pro may be difficult to explain — especially if you haven't played around with any other headsets that came before it — but you've come to the right place.

In this chapter, I introduce you to the Apple Vision Pro — covering everything from what it is and what it does to how it differs from other headsets and what it can do for you. If you're curious about Apple Vision Pro, or if you have one and you don't know where to start, this chapter (and book!) is for you.

# Virtual Reality and Augmented Reality: It All Comes Together in Apple Vision Pro

Apple refers to Apple Vision Pro as a “spatial computer,” but it’s really a high-tech headset that fuses virtual reality with augmented reality to create mixed reality:

» **Virtual reality (VR):** In VR, you put on a special headset and you’re engaged with a fully immersive digital environment. You don’t see the real world through the headset — you only see a virtual world, and it’s super immersive because the visuals are all around you, in 360 degrees. What you see is also tied to head tracking, which means wherever you turn your head while wearing the headset — up, down, side to side, or even behind you — that same perspective is seen in the virtual world you’re in. Because of this feature, VR can trick your brain into thinking that what you’re seeing is the real deal.

But it doesn’t just stop there. Audio is also “spatialized” in a VR world, so you can hear sounds all around you, such as a moaning zombie creeping up from behind you, a towering dinosaur in front of you, or someone talking to you from the right or left of you. The audio helps add to the effect.

» **Augmented reality (AR):** In AR, you can still see the real world around you — either through a headset you wear or by holding up your smartphone and looking through the camera lens — but what you see is *augmented* (enhanced) with digital information.

The hit mobile game Pokémon GO is an example of AR. You hold up your phone at, say, a park, and you see the real-world trees, bushes, and park benches on your phone’s screen — but superimposed on top are cute Pokémon creatures, so it looks like they’re right there with you.

Wearing a headset with AR works the same way, but it’s even cooler because you’re hands-free.

So, where does Apple Vision Pro fit into all this? It seamlessly blends AR and VR into one device to create a mixed reality (MR) experience, allowing you to toggle between AR and VR, depending on the application and/or your environment while wearing what looks like futuristic ski goggles (see Figure 1-1). So, you can stay “present” with what’s going on around you in the real world, or you can completely close yourself off from your surroundings.

For example, you may be video chatting with someone online over FaceTime, but you’re still able to pour dog food into a bowl and serve it to your furry friend doing the dinnertime dance at your feet. This feature is often referred to as *passthrough*, because you can see the real world when you want to.



**FIGURE 1-1:**  
The Apple Vision Pro headset.

*Courtesy of Apple, Inc.*

Alternatively, if you're alone on the sofa and you want to kick back and watch a movie, Apple Vision Pro will automatically dim the family room so you see only the giant (virtual) video screen in front of you. Or you can choose to engage in a VR experience like Encounter Dinosaurs, where you come face-to-face with the prehistoric beasts, and you're completely immersed in the experience (see Figure 1-2). You can even “interact” with the dinosaurs — try to touch different creatures, and they'll likely respond differently. Plus, if you move around during the experience, the dinosaurs' eyes will follow your movements. Turn to Chapter 9 for more on Encounter Dinosaurs.



**FIGURE 1-2:**  
Encounter Dinosaurs brings dinosaurs into your living room . . . if you dare!

*Courtesy of Apple, Inc.*



Other headsets, such as the Meta Quest 3, can straddle AR and VR and have passthrough. Part of what makes Apple Vision Pro unique is *how* you access the content (see the next section).

## The Apple Vision Pro User Interface: Using Your Eyes, Hands, and Voice

Instead of using videogame-like controllers, you control three-dimensional user interface of Apple Vision Pro using your eyes, hands, and voice. You highlight an app or image merely by looking at it; reach into the air to “touch” (select) the digital content or “pin” it to one side of the room you’re in; use gestures (see Figure 1-3) to swipe up, down, and side to side to navigate through virtual items (say, while inside a game or photo library); and summon Siri, your voice-activated personal assistant, as yet another way to interact with it all. (Turn to Chapter 3 for much more detail about how to use the Apple Vision Pro controls and Chapter 5 to tweak Apple Vision Pro settings.)



**FIGURE 1-3:** You can access content with gestures, as well as eye movement and your voice.

*Courtesy of Apple, Inc.*



In all fairness, Microsoft paved the way for Apple Vision Pro with its HoloLens mixed-reality headset, which debuted in 2016. Although primarily used for business applications, HoloLens introduced many of these gesture-based controls popularized by Apple today.

You can also add a wireless Magic Keyboard and/or Magic Trackpad, if you want to treat Apple Vision Pro like an extension of your Mac experience.



TIP

If you haven't ordered Apple Vision Pro yet, be aware that you must scan your face using an iPhone or iPad with Face ID for fitting purposes. It's similar to setting up Face ID to log into your iPhone, iPad, or Mac. If you can't do this or don't want to do it, you can do a facial scan at your local Apple Store, with the help of a staff member.

## LIVING IN THE APPLE UNIVERSE

A key differentiator between Apple Vision Pro and other headsets is that only Apple Vision Pro can run popular Apple apps you may already use on your iPhone, iPad, and Mac. This includes default apps like App Store, Books, Calendar, Camera, Contacts, FaceTime, Files, Keynote, Mail, Maps, Messages, Mindfulness, Music, News, Notes, Photos, Reminders, Safari, Stocks, Voice Memos, and more — all in mixed reality. Check out the figure — don't these apps look familiar?



*Courtesy of Apple, Inc.*

Plus, because most of these apps are synchronized over iCloud, when you log into, say, Photos or Notes, what you see in Apple Vision Pro is the same as what you see on your other Apple devices (and vice versa).

Apple Vision Pro is powered by Apple's visionOS, billed by Apple as the "world's first spatial operating system" (though Microsoft and the HoloLens team may have something to say about that!). visionOS now joins other Apple operating systems: iOS (for iPhone), iPadOS (for iPad), macOS (for Mac computers), watchOS (for Apple Watch), and tvOS (for Apple TV).

# Finding Out What's in the Box

When you open the Apple Vision Pro box for the first time, here's what you'll find inside:

- » Apple Vision Pro headset with cover
- » Battery with attached power cable
- » 30W USB-C power adapter
- » USB-C charge cable
- » Light Seal
- » Two Light Seal Cushions
- » Solo Knit Band
- » Dual Loop Band
- » Enclosure and audio straps
- » Polishing cloth
- » Information booklet

Before you can begin using Apple Vision Pro, you'll need to charge the battery, connect the power cable, and attach your ZEISS Optical Inserts (if you use them). Sold by Apple and developed in partnership with ZEISS, custom optical inserts are supported for users with prescription glasses; the optical inserts magnetically attach to the main lens inside the headset (see Figure 1-4).



TIP

Apple also sells other accessories for Apple Vision Pro, including the Apple Vision Pro Travel Case (\$199), Light Seal (\$199), and Light Seal Cushion (\$29). For developers, there's also the Developer Strap for Vision Pro (\$299), which includes a dongle to connect the headset to a PC or Mac via a USB-C cable, which helps with creating and transferring large apps, games, and files. At the time of this writing, the only official third-party accessory available is a battery holder made by Belkin.



**FIGURE 1-4:** ZEISS Optical Inserts allow people who wear glasses to use Apple Vision Pro.

*Courtesy of Apple, Inc.*

## Covering the Apple Vision Pro Specs

After you remove the soft cushion cover from your Apple Vision Pro, you'll see it has a smooth, curved laminated glass display on the front and a flexible cushion, called a Light Seal, on the inside surrounding the two 1.41-inch micro LED displays (one for each eye), as shown in Figure 1-5. The Light Seal connects magnetically to the inside of the visor.

The twin 4K screens (3,660 x 3,200 pixels each) displays a total of 23 megapixels, running at a smooth 90 frames per second (but depending on the content, it could automatically increase to 96 or 100 frames per second). Also on the front of the headset are five sensors, six microphones, and 12 cameras.

The cameras and sensors allow you to see the room you're in. They're also used to capture amazingly realistic photos and videos (see Chapter 13). Infrared cameras and sensors (accelerometers and gyroscopes) read your face, too. They use iris-tracking technology (so Apple Vision Pro knows where you're looking on the screen), mirror your real-time facial expressions in a FaceTime call (see Chapter 6), and much more.

**FIGURE 1-5:** Apple Vision Pro with its dark visor and Light Seal (the mesh gray part) covering the twin 4K screens.



Courtesy of Apple, Inc.



TECHNICAL  
STUFF

An *accelerometer* is a sensor that measures acceleration, which is a change in speed or direction. Similarly, a *gyroscope* is used for rotational tracking in a three-dimensional space (sensing movements of pitch, yaw, and roll). In a device like a smartphone or headset, the accelerometer and gyroscope work together to provide more complete and accurate movement tracking.

As you set up your Apple Vision Pro for the first time, your face will be scanned by the headset (see Figure 1-6) to generate a *Persona* (a realistic-looking avatar of yourself to use in FaceTime calls and other applications).

**FIGURE 1-6:** You'll scan your face in Apple Vision Pro and use this Persona to video chat with others online, among other things.



Courtesy of Apple, Inc.

An Apple Vision Pro feature called EyeSight shows the eyes of your avatar through your Apple Vision Pro headset, which appear dimmed when in AR apps or opaque when in full VR immersion. When someone approaches you and/or speaks, EyeSight shows their Persona’s virtual eyes normally, and the person is visible to you. (Turn to Chapter 2 for more information.)

The headset has an aluminum frame on its sides, a removable and adjustable headband, and the Digital Crown (a twistable knob) on the right side of Apple Vision Pro to tighten or loosen the fit.

For audio, Apple Vision Pro has a bone conduction speaker inside the headband, which is placed directly over each of your ears and supports surround sound. At any time, you can add Bluetooth wireless headphones or earbuds, too, if you want.

Twin cooling fans (about 1.6 inches in diameter) are near the eyes to help dispense heat, and noise-canceling technology makes it so you don’t hear the fans.

Apple Vision Pro is powered by the M2 chip. The M2 is custom Apple-made silicon, with a unique dual-chip design. It’s accompanied by a co-processor referred to as Apple R1, used primarily for real-time sensor input processing.

As for storage, when you buy Apple Vision Pro, you’ll need to choose from one of three options: 256GB, 512GB, and 1TB. You can’t upgrade the storage in the future, so be sure to order a device with enough storage to suit your needs. I recommend at least 512GB, so you don’t have buyer’s remorse if you run out of room on your headset. If you want to download a lot of games and apps (dozens of them), or you want to view many and/or longer videos, go for 1TB of storage — budget permitting, of course.

Unfortunately, the Apple Vision Pro battery isn’t built into the headset itself. Instead, Apple Vision Pro is powered by an external battery about the size of an iPhone. It looks like a silver power bank you may have to charge up your iPhone when you’re out and about. The silver lining, at least, is that if the battery needs to be replaced for any reason, you’re not without your entire headset (plus, you can buy a second, backup battery and swap it out easily, if you’re not going to be near a power outlet for a while). The headset has a small port on the right side that connects to the white USB-C cable, which plugs into the power supply. According to Apple, you can also attach Apple Vision Pro to a USB-C port on a Mac or another power bank battery rated for at least two and a half hours of use.

