

# Google Cardboard

**Ben Everard** builds a virtual reality headset from an old pizza box. Forget jetpacks and hoverboards – this is the future.

The idea behind Google Cardboard is simple: take a mobile phone, place it close to your eyes and use one half of the screen to display an image to one eye, and another half of the screen to display an image to the other eye. This creates a stereoscopic 3D image that has half the horizontal resolution of the phone.

Google Cardboard does this with a piece of folded cardboard that fits onto your face and includes a pair of plastic lenses to help your eyes focus on the screen. There's also an NFC tag so your phone can tell it's in the device and a pair of magnets to provide input to the device.

You can buy kits with the cardboard pre-cut (from Amazon, **DX.com** or others), or you can just get the lenses and NFC tag (and magnets as well if your phone is compatible), then download the design files and make it from any pieces of cardboard you have lying about.

The biggest problem with Cardboard is how incompatible it is with many devices. More or less any phone should be able to display 3D images and video. The best source of these is probably YouTube (search for SBS 3D to find glass-compatible videos). Phones with a hardware gyroscope can also do head tracking, enabling you to look around the 3D world.

In fact, the gyroscope is probably the biggest problem with Cardboard at the moment. Not only do many phones (even some listed as 'partially-compatible' on Google's website) not have one, but those that do often have calibration problems that leave the 3D world slowly spinning (a problem known as gyro drift). It might be possible to correct (or at least minimise) this problem in software in the future, or this might prove too complex. For now, at least, this problem means that head tracking in Cardboard



is only really suitable for simple applications and not serious 3D work. This is a shame, and we hope that a solution is found.

## What would MacGyver do?

The magnetic switch is probably the least reliable part of Cardboard. This should work with the Nexus 5, with other phones hit-and-miss at best. Without the magnetic switch, the method of getting input into the phone is to poke your finger through the nose hole and tap the screen. This is inelegant, but it works. Apparently, you can use a strip of copper tape to conduct a touch from outside the device to the screen, but we've been unable to test this.

Cardboard feels like (and it is) a hacky prototype stage. It's far from a consumer-ready device, and there's not a lot of software available for it yet. However, given the price it's selling at, we think that this is acceptable (gyro-drift aside). In fact, playing with Cardboard is ridiculously good fun partially because it feels so hacky. It literally is a virtual reality headset that you can build yourself, and that alone is enough to get us excited. There's just something about being able to use a device you've built to look around in a 3D world that restores our child-like wonder in computing far more than any closed off device you can pick up off a shop's shelf. We're giving Cardboard a maximum score because it's such a joy to use, not because it works perfectly. 

Anything that can output two images side by side can be used with Cardboard. This is the rollercoaster from <http://g.co/chromevr>

## DATA

**Web**  
<https://cardboard.withgoogle.com>  
**Developer**  
Google  
**Price**  
No official price. Various unofficial options from about £5.



The standard Cardboard (shown here) should fit most phones, but there's an unofficial large version that claims to fit phones up to 7 inches in size.

## LINUX VOICE VERDICT

The most fun you can have with an old pizza box. Just don't expect everything to work perfectly.

