Raspberry Pi Announces $5 Computer: Model Zero

By **David Scheltema** November 25th, 2015 11:00 pm

Today, Raspberry Pi announced its newest model, the Zero. Costing just $5, it represents a vast decrease in price that should afford more people the opportunity to use computers than ever before. Considerably smaller than the common Raspberry Pi model B, Pi Zero operates at 1GHz with 512MB of RAM, making it about 40–60% faster according to Raspberry Pi Foundation CEO Eben Upton.

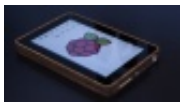
Photography by Hep Svadja

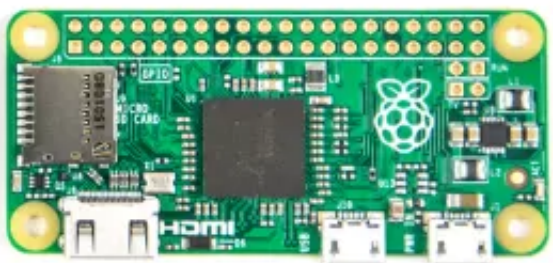
Until now the Raspberry Pi Foundation did not have an ultra low cost board that delivered competitive specifications. Instead, the foundation has relied on an enormous user community, supported by millions of users who contribute software development skills, generate original Pi projects, and help educate others on how to use the boards. With self-reported sales of 250,000 Pi boards per month, adding the Pi Zero to the lineup will only increase the foundation's popularity.

Projects Using Raspberry Pi


5 Raspberry Pi Projects to Build This Weekend


Rebroadcast Internet Radio with a Raspberry Pi


How I Built a Raspberry Pi Tablet

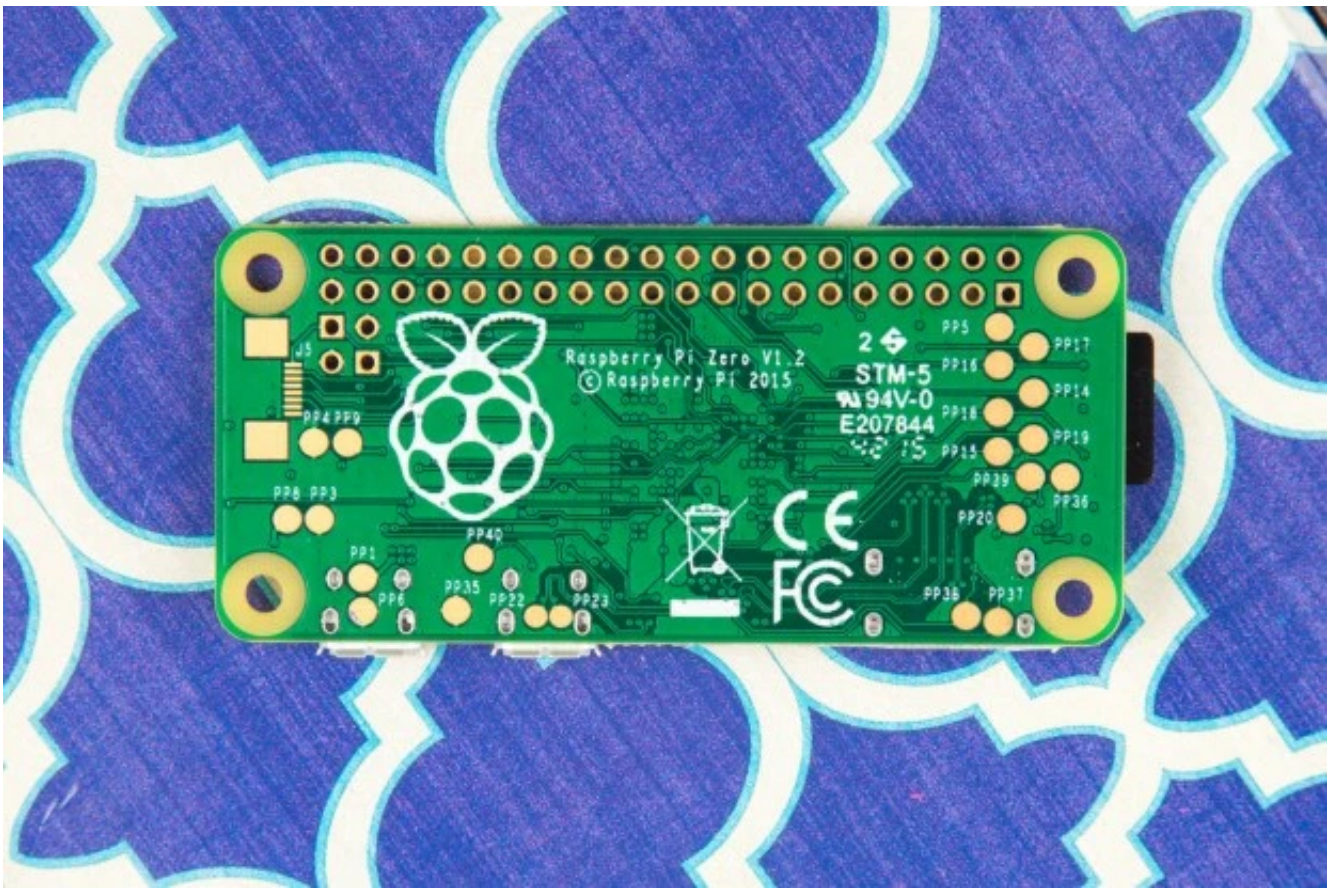


SPECIFICATIONS CHEAT SHEET

- Processor: 1GHz **Broadcomm BCM2835**
- Memory: 512MB of RAM
- Storage: a user-supplied microSD
- GPIO: 26/40 unpopulated through-holes
- USB ports:
  - USB On-the-Go (OTG)
  - Micro USB
- Vido Output:
  - Composite video is available from 2 unpopulated pins labeled `TV`
  - HDMI video is available from a mini HDMI port

DESIGN CHANGES

Smaller than any previous Raspberry Pi at 30mm×65mm and only 6mm tall — the new form factor designed by Pi Foundation engineer Mike Stimson is in part due to the reduction of components. The board lacks both ethernet and composite video ports, the HDMI connector shrank from a standard size to an HDMI micro connector, and two micro USB connectors replace the standard size USB ports on the original Pi. Gone too are plastic CSI and DSI connectors for camera and display wiring. Fewer components means lower cost.



The Pi Zero has no components on one side.

Further helping to reduce cost is the single-side board design. This means that components are only installed on one side of the board, which lessens the cost of manufacturing each unit.

DIRECTION OF INNOVATION

Upton credits a 2013 conversation with Google's Eric Schmidt for changing the Foundation's approach to hardware development. At the time, Upton and team were working on a more powerful Pi that would cost between $50 and $60. Upon learning this, Schmidt argued that it was the wrong approach. Instead, he believed the Foundation ought to work on making cheaper solutions, and focus on getting more boards in the hands of more people.

More Raspberry Pi News

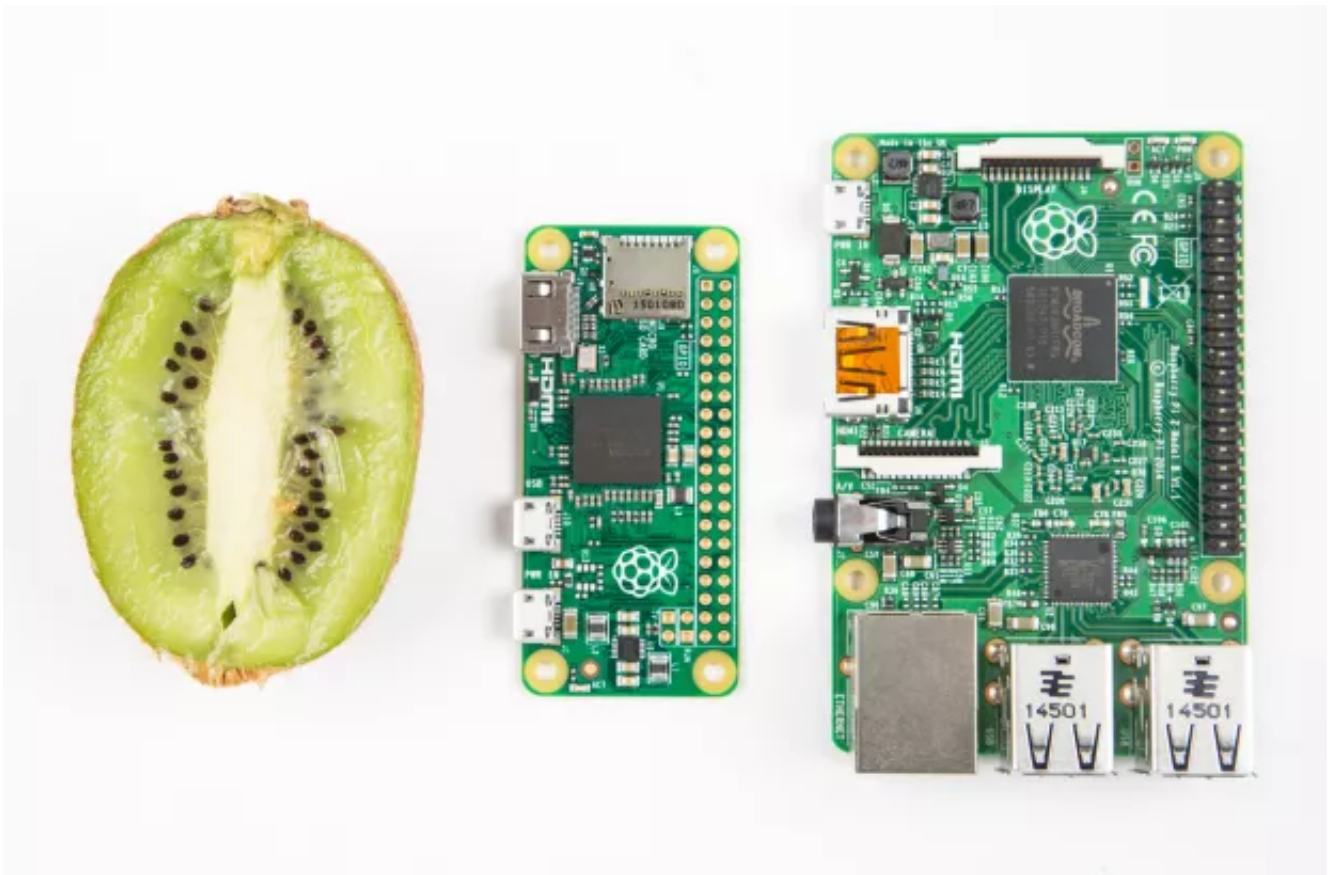
Microsoft Announces Windows Support for the Raspberry Pi 2

Exclusive First Look: Hands On With the Fast, Powerful Raspberry Pi 2

Tips and Tricks: Using Windows 10 IoT Core for Raspberry Pi 2

Now on Sale: The Official Raspberry Pi 7" Touchscreen

"The temptation for a technologist if you're designing for yourself is to push the price up and push the features up," Upton admits. But ultimately Schmidt's advice won him over. The Foundation scrapped the idea of the expensive board and set out to design the $35 Raspberry Pi 2, and eventually, the $5 Zero.



LINEAGE OF AFFORDABLE PIS

The Raspberry Pi A+ was the first example of this new approach to building lower cost hardware. By reducing the feature set on the board, the foundation lowered the price from $35 to $20. And with the lower cost, more people could try out the product.

Building the $35 more powerful Raspberry Pi 2 proved to be more challenging. The team took a little more than two years to develop the board Schmidt encouraged. The result, though, was certainly worth it. The Pi 2 was the first multicore board from the foundation, and provides users with a much faster, more powerful system. While the board took longer to develop than the more expensive design, reorienting their engineering to lower cost was a worthwhile endeavor.

OPEN SOURCE COMMUNITY

Upton also acknowledges the enormous work done by the open source software community, which has made the Raspberry Pi an attractive platform. He estimates that the community has given around 1,000 years of software development time improving the software experience. The community is sure to expand thanks to the new, inexpensive, powerful Pi Zero.

Here at *Make:* we've already started to work on new projects using the Pi Zero. And since the hardware is nearly 100% compatible with previous Pi boards, it only took a bit of command line hacking to get our Pirate Radio project ported to the Zero. (Stay tuned for our full project build, and **see the original here**.) Most importantly, we want to know what you will make with the new, smaller, and cheaper Raspberry Pi Zero: Tell us in the comments below.

Related Topics **#RASPBERRY PI** **#RASPBERRY PI ZERO** **#$5 COMPUTER**

DAVID SCHELTEMA

I love to tinker and write about electronics. My days are spent building projects and working as a Technical Editor for MAKE.

Related Stories from Make:

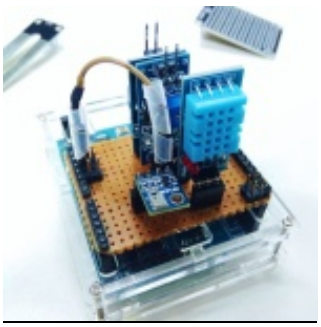
Roomba, I Command Thee: Use Raspberry Pi for Voice Control

Raspberry Pirate Radio

Long-Range Wireless Broadcasts: Raspberry Pi Slow Scan Television (SSTV) Camera

Raspberry Pi Car Computer

More Ideas From Make:



Build Your Own Arduino Weather Station

6 DIY Swords from Small to Super-Sized

Every Single Barnes & Noble Will Host a Mini Maker Faire This Weekend

Get Started with BeagleBone

Join the discussion…

Nick Shvelidze • 4 hours ago

How do you connect it to a network

1 • Reply • Share ›

Ulric Eriksson ↗ Nick Shvelidze • 3 hours ago

PPP over serial seems like a straightforward way.

• Reply • Share ›

Ulric Eriksson ↗ Ulric Eriksson • 3 hours ago

http://elinux.org/RPi_Serial_C...

• Reply • Share ›

Hong Chanhwa ↗ Nick Shvelidze • 3 hours ago

Maybe connect to USB port

• Reply • Share ›

Bruno Correia • 3 hours ago

I would like to see a version of raspberry pi with wifi and pmic integrated to the board, especially if this version is intended to be used in wearable projects.

• Reply • Share ›