# Next Thing Co. Releases "World's First" $9 Computer

- By David Scheltema

Snugly situated in an industrial section of Oakland, California, is Next Thing Co., a team of nine artists and engineers who are pursuing the dream of a lower cost single-board computer. Today they've unveiled their progress on Kickstarter, offering a $9 development board called Chip.

The board is Open Hardware, runs a flavor of Debian Linux, and boasts a 1GHz R8 ARM processor, 512MB of RAM, and 4GB of eMMC storage. It is more powerful than a Raspberry Pi B+ and equal to the BeagleBone Black in clock speed, RAM, and storage. Differentiating Chip from Beagle is its built-in Wi-Fi, Bluetooth, and the ease with which it can be made portable, thanks to circuitry that handles battery operation.
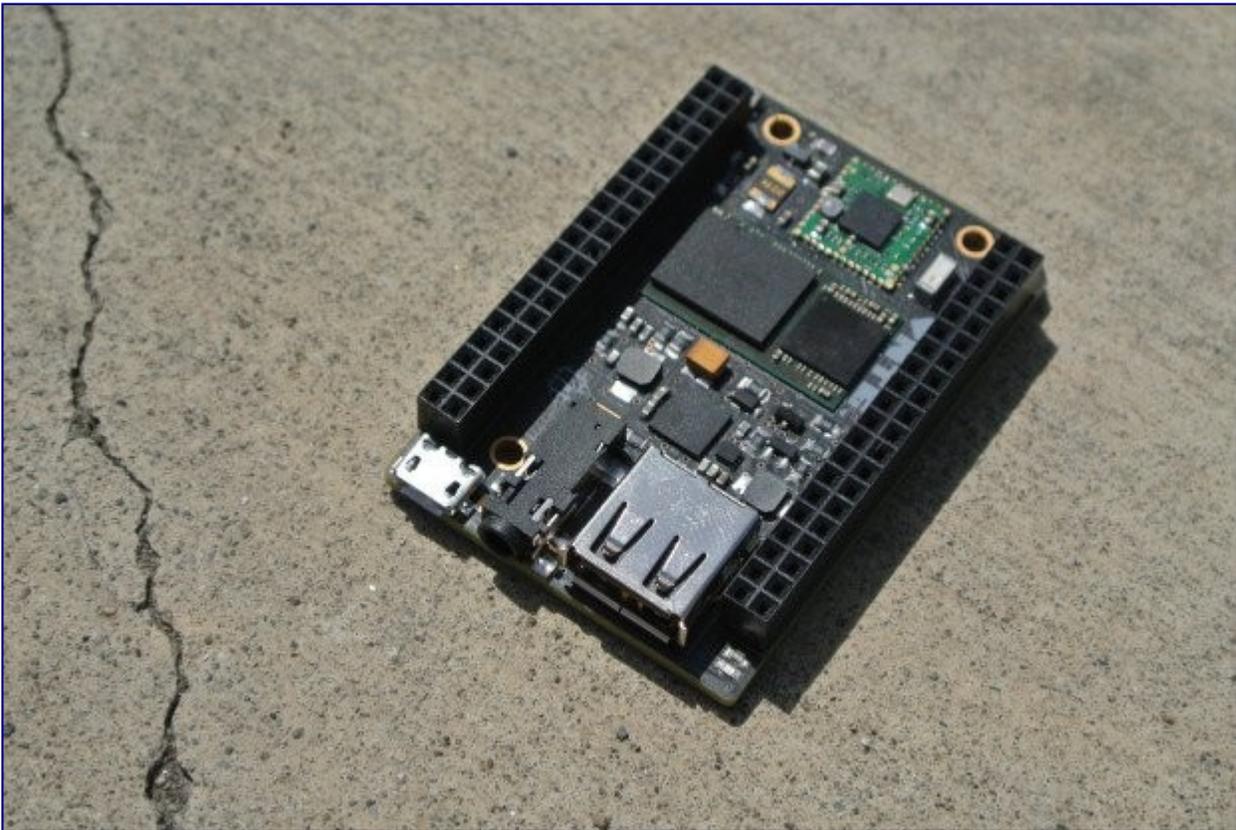
Meet Chip, the $9 computer

If you're wondering how Chip could be this inexpensive, you can thank cheap Chinese tablets. The system-on-chip (SoC) used in the development board is based on an A13 processor by Allwinner, a Shenzhen-based semiconductor company. As recently as 2013, Allwinner was the second largest tablet manufacturer in the world, and the A13 was the most successful processor in Allwinner's lineup.

Try it now — query for "a13-based tablets" and you'll discover sub-$50 devices at clock speeds near that of Chip.

How an industry giant and a tiny startup came to partner on a sub-$10 computing device owes to Next Thing's history developing products and business connections with Shenzhen-based accelerator HAXLR8R, says Dave Rauchwerk, one of Next Thing's three founders. "Once they understood what we were trying to do, they supported us fully."

Rauchwerk, outside Next Thing Co.'s Oakland headquarters

Connecting with the right company wasn't the only break the Oakland-based team had going for them. At the same time they were meeting with Allwinner and explaining their aspirations for a dirt-cheap computer, Allwinner was looking to redesign their successful A13 processor in a new, smaller form factor as a cheaper system-on-chip. It is this new chip, called the R8, that Next Thing received early access to and used in its board design.

This isn't the first product Next Thing has offered on Kickstarter. The collaboration began among friends: Thomas Deckert, Dave Rauchwerk, and Gustavo Huber wanted to create an animated GI camera, and that led them to enroll in and successfully complete HAXLR8R in 2014. Out of the experience, armed with new business contacts and support, they designed, developed, and successfully funded the camera of their dreams, OTTO. Attracting 414 backers and raising $71,559 was an accomplishment. But more importantly, they have manufactured and are in the process of fulfilling

rewards to backers.

Next Thing's camera collection, with OTTO on the lower right

However, the OTTO design process was not without difficulty. Deckert, Rauchwerk, and Huber realized that the software and hardware available to them for making a product was suboptimal. It was overly complex in all the wrong ways, and the cost of entry to actually make something was way too much. While developing OTTO, the three swore they would eventually build the tool they wanted. To them, Chip is that promise realized.

"OTTO is a tool for experimenting with photography," says Rauchwerk. "Chip is a tool for experimenting with computers."

Though the team didn't set out to make shields for Chip, they recalled their frustrations with available hardware accessories while developing OTTO. The board has a built-in composite video output, but they also built two video breakout boards — one shield for legacy VGA monitors and a second for the more modern HDMI connectors.

But just outputting video didn't provide the full solution for how to develop on Chip. The final accessory — and perhaps the most exciting — is Pocket Chip, a portable, handheld enclosure with an LCD screen, full QWERTY keyboard, and internal battery. With this combination, the Pocket Chip is a fully functioning $50 computer — no need for a monitor or keyboard, it's all built-in.
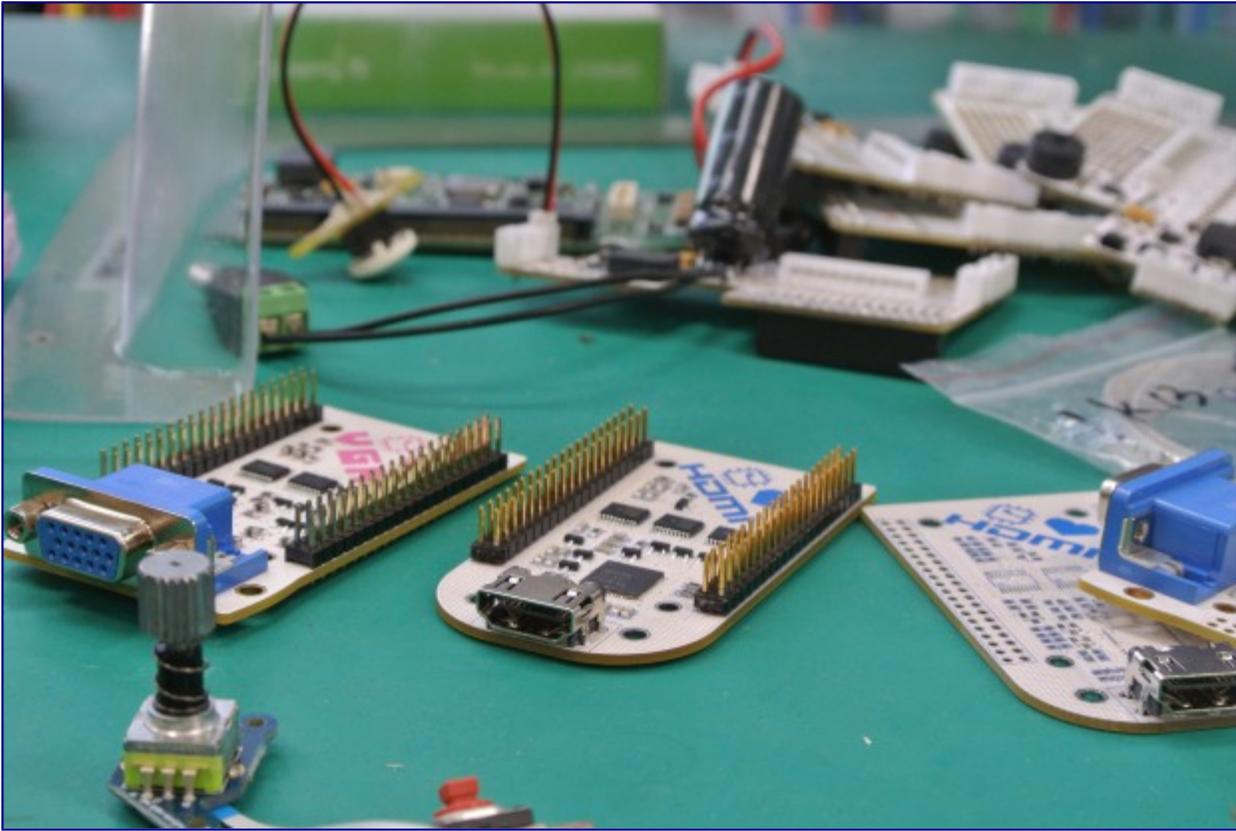
HDMI and VGA breakouts

View All

Both the Chip and Pocket Chip are priced so low it's difficult to imagine a community not quickly coalescing around them. Spend next to zero time wiring a display, keyboard, and battery, and the first moments with the board can be spent making what you want. Bootstrapping is next to abolished.

"The $9 becomes really interesting when lots of people can help make it awesome," says Rauchwerk. "We wanted to find a way to not only give everyone access to it but to give them the ability to participate in this process of developing it."

View All

Baring some unforeseen disinterest in cheap single-board computers, Next Thing Co. should attract enough backers and reach their funding goal. Certainly, any crowdfunding campaign is not without risk. Attempting to reestablish the cost of development boards is not likely to go unnoticed by larger players. Will supply chains narrow? Will big companies care about a $9 computer and try to cut costs, or will we see a concession on price, and redoubling of efforts to make their user experience better?

Chip is near reality. There's a working prototype, though it uses the older A13. The new R8-based boards are due in the States later this week and the team has a positive crowdfunding history. If they pull this off, there's a great deal of potential for the community, says Rauchwerk.

"Success for us is them seeing what we've done and being excited about it and backing it."