
Over 40 Years Of Singleboard Computers

Hello reader,

From a purely academic standpoint my curiosity about singleboard computing has led to some fascinating discoveries. The very first true singleboard computer was a standalone unit called the "Dyna-Micro" by Radio Electronics. It was capable of a few hundred thousand operations per second and was typically programmed on the spot for use in whatever applications were required of it using a built on interface. It's popularity waned with the advent of personal computers, which were at least partly possible, due to it's own success.

*The term "Single Board Computer" now generally applies to an architecture where the single board computer is plugged into a [backplane](#) to provide for I/O cards. In the case of [PC104](#), the bus is not a backplane in the traditional sense but is a series of pin connectors allowing I/O boards to be stacked. ~ via Wikipedia

Sbc usefulness

Many sbcs fit a specific profile for compatibility across a wide variety of possible applications. The various architectures serve as a "fitness for use" reminder that not long ago there was a standard size expected of sbcs of 17" to fit the rackspace in industrial and networked applications. In fact many sbcs didn't require a hard drive as they would be controlled from elsewhere and merely relayed i/o commands to given machine, much like the industrial scale sorting operations conducted by the U.S. Postal Service.

Courtesy of [Reed Tradex](#)

The advent of sbc evolution

In recent years the capabilities of sbcs have rapidly approached desktop and laptop performance. As a result we may look closely at the history of those technologies to see the direction these devices are headed. As recently as 5 years ago it might have been a difficult task to do what I am doing at this moment. I'm writing this article from a singleboard computer on a modern operating system with no system performance issues of any kind. I have presently 4 such devices by various manufacturers, each perfectly capable of this and many other tasks. Any of them can play HD video, any of them can do at least 90% of what my laptops and desktops can do. However we should account for the other side of sbcs and focus on what they can do that personal computers can not, namely, each can be networked into a system of automation, or used in industrial manufacture, or robotics, or in development of devices that standalone... and can be autonomous.

Traffic lights

One needn't go far to see the countless applications that seem to work autonomously, and are driven by micro-controllers and embedded systems. For over 40 years the hidden computers

that propel every imaginable technology go largely unnoticed because we simply grew up accustomed to them. You probably never marveled at the computer systems driving the flaps of an aircraft because whether it was hydraulics or not the system propelling it was likely not something you experienced. Likewise the systems that control pumps, engines, and every manner of electronic device are kept largely hidden to present the form and function of a product. You might be surprised to discover how many devices use practically identical micro-controllers.

The future

As more tablets and phones appear, and PC markets seem somewhat uncertain, the emerging sbc market may very well revitalize the market and the IOT revolution will become a lot more hands on. I'm already thinking of ways to build better attachment systems that expose gpio pins to control boards, and I made my second sbc case out of a used lunchmeat container. Popsicle sticks may be my "go-to" in the future because making something that fits a form factor of your choosing should require a bit of elementary school thinking.