China secretly turned Huawei into the most powerful weapon in the chip war

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Less than five years after U.S. sanctions nearly crippled Huawei Technologies Co., the Chinese giant is now Beijing's most important weapon in the semiconductor war that will shape the world economy. world for decades to come.

Huawei's role in the Chinese chip industry goes beyond what was previously reported. In addition to being the most important customer of the country's leading chip manufacturers and chip designers, Huawei is increasingly lending its technical expertise and financial support to smaller companies in strategic sectors. chip supply chain strategy. It often does this without disclosing its involvement – ??which would trigger US restrictions.

State support for the company has also reached unprecedented levels. Bloomberg News has discovered a network of businesses backed by the Shenzhen municipal government's investment fund, focused on helping Huawei build a self-sufficient chip network. The group includes optical experts, chip device developers and chemical manufacturers. This is in addition to a $30 billion state-sponsored effort to help Huawei build chip-fabrication facilities that Bloomberg News first reported in August.

Build a self-sufficient chip network

The state investment fund is a pillar in efforts to strengthen Huawei. Kendra Schaefer, partner at Beijing-based consulting firm Trivium China, said: *'Huawei is now the centerpiece. Export controls have pushed state and industry together in a way we have never seen before* '.

Huawei denies that the government supports it in developing semiconductor technology. *'This is purely speculation based on online information* ,' the company said in a statement.

According to several people involved who requested anonymity due to the sensitivity of the issue, the decision to make Huawei a leader in China's push to develop a self-sufficient chip industry was the result of a direct order. from the highest levels of government.

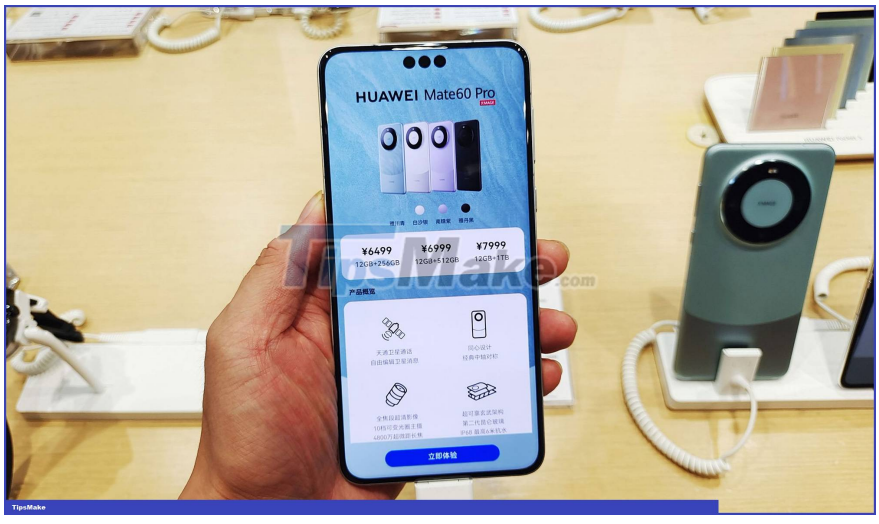
Founded in 1987, Huawei first made its mark in the communications equipment industry before expanding into mobile phones. More than a decade ago, when business was booming, Huawei determined that continued

investment in semiconductor research was the only way to stave off the threat to the company.

In the fight for survival following the US blacklisting in 2019, Huawei executives shifted up to 10,000 developers to 24-hour work in a race to redesign circuit boards and software to they can operate without American technology. At the busiest times, some employees did not leave Shenzhen for days, living on instant noodles and sleeping on the couch.

That dedicated effort has kept the company in business. During this time, the Chinese state also began to increase support, paving the way for today's interdependent relationship.

To see how deeply engaged Huawei and the Chinese government are now, look no further than the launch of the new Mate 60 Pro smartphone in August. Huawei sets phone release date coincided with a visit to China by US Commerce Secretary Gina Raimondo, in part because of direct encouragement from a senior official at the head of state.



However, Huawei denied that government officials requested the Mate 60 Pro phone to be introduced earlier than initially expected. The importance of this phone lies in the fact that it contains a large proportion of

advanced components made in China, especially the 7-nanometer processor from Shanghai Semiconductor Manufacturing International Corporation. Hailed by the Chinese press as a patriotic victory, it has sparked heated debate in the US about whether efforts to slow China's technological progress have failed.

Huawei's breakthrough phone

An analysis conducted shows that the majority of components in Huawei's Mate 60 are made in China

The concern in Washington is that the advanced semiconductors powering Huawei's smartphones could also be used for military applications, such as AI-controlled drones or supersonic drones. computers for code breaking and surveillance. The US is determined to restrain China's defense capabilities as tensions between the two countries increase.

At the heart of the network of state-owned enterprises supporting Huawei is an investment fund run by the Shenzhen city government, where Huawei is headquartered. Shenzhen Large Industry Investment Group Company was established in 2019 with state capital and direct orders to support chip manufacturing efforts of China and Huawei in particular.

According to data from Tianyancha, an online platform that provides company registration information, it has invested in about a dozen companies in the supply chain, including three chip manufacturing facilities linked to Huawei. But perhaps its most important operation is a chip tooling company called SiCarrier Technology Ltd., founded in 2021.

SiCarrier has formed a close, symbiotic relationship with Huawei, where the company primarily interfaces with the electronics giant's internal research department, known as the 2012 Lab (Huawei CEO named it after Roland Emmerich's apocalyptic film, in which China is the only country to succeed in building giant ships to overcome planet-wide natural disasters).

According to some sources, SiCarrier is strongly recruiting elite engineers to work directly on Huawei projects in Shenzhen and Dongguan. (Recruits are asked not to reveal who they actually work for).

Huawei has also transferred about a dozen patents to the SiCarrier, including soundproofing technology for electronic machines and data center design, according to patent transfer information published by the National Intellectual Property Administration of China. dad. Huawei said any suggestion of a partnership with SiCarrier to collaborate on chip technology is 'not consistent with reality'. Major Shenzhen Industrial Investment Group SiCarrier and its affiliates did not respond to requests for comment.

SiCarrier's importance to Huawei is more than just a manufacturer: SiCarrier is also the link between Huawei and the rest of the supply chain. For example, SiCarrier is the largest shareholder of optical machine maker Zetop Technologies Co., according to Tianyancha. This technology is at the heart of microchip manufacturing, which is built from layer after layer of transistors bonded to a silicon wafer. The key to this is a process called lithography in which light is shined through the design of the pattern to be printed.

Lithography is a particularly important field because the Dutch company ASML Holding NV has a monopoly on ultraviolet lithography equipment – ??needed to create the most advanced chips – and has never sold it. those machines for China. With the US imposing sanctions, ASML will also stop selling to Chinese customers most ultraviolet equipment, which are slightly less sophisticated semiconductor manufacturing machines.

After being blacklisted, Huawei hired several former ASML employees to work on chip manufacturing machines. Bloomberg News found the LinkedIn profiles of five former ASML employees – including two who previously lived in the Netherlands – that said they joined Huawei between 2021 and 2022.

EUV equipment has taken the West decades and hundreds of millions of dollars to develop, so the release of the Mate 60 smartphone shows that the massive effort focused on Huawei is making progress.

Huawei has never revealed technical details, but a teardown of the phone by TechInsights shows that it is powered by SMIC's advanced 7-nanometer processor. That shows that China is about 5 years behind today's most advanced technology. Export controls imposed by the Biden administration in 2022 are aimed at keeping China at least eight years behind.

Huawei is also getting a commercial boost. The launch of the Mate 60 Pro has reinvigorated its devices business, with analysts expecting handset sales to jump to 40 million to 60 million units next year.
'More government subsidies will make it even more difficult for Huawei to present itself as independent. But the subsidies will also allow Huawei to sell products at lower prices ,' said Chris Miller, author of the book Chip

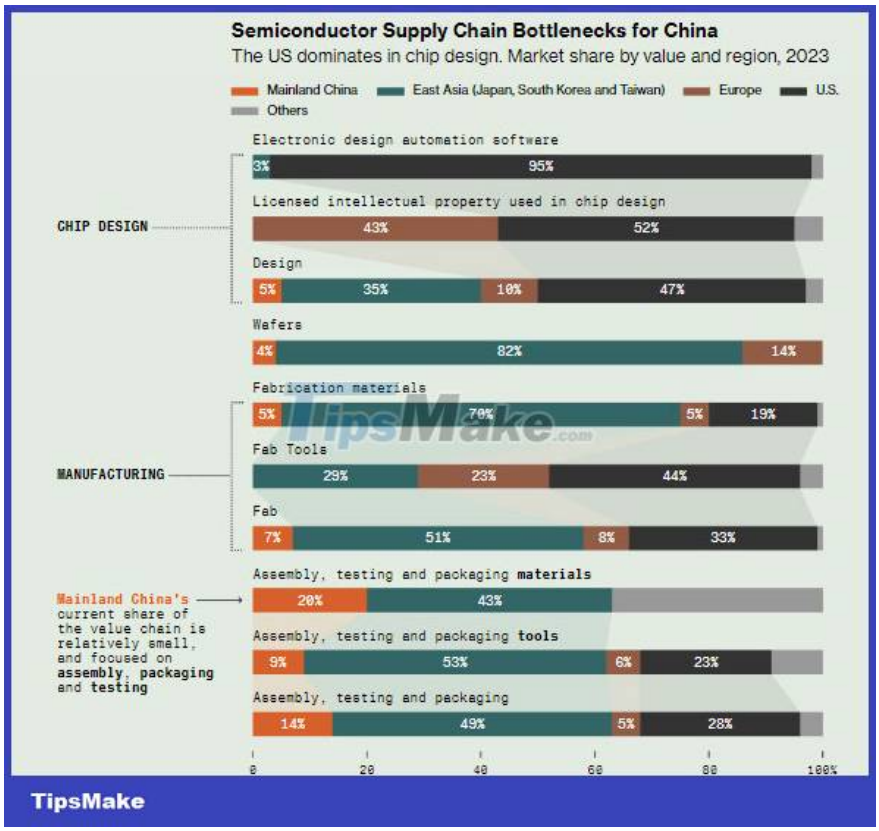
War: The Fight for the World's Most Critical Technology. *'In many emerging markets, this will likely help Huawei gain market share'* .

Analysts expect China to continue pouring billions of dollars into the chip race, as the consequences of being left behind could seriously damage the country's ambitions in developing sectors. as fast as AI.

Dylan Patel, founder of research group SemiAnalysis said: *'The scale of investment is huge, far beyond what people usually think.' 'They will build apartment buildings, support land and not pay income tax.'*

China does not need to establish self-sufficiency at every step of the semiconductor supply chain. Clifford Kurz, an analyst at S&P Global Ratings, said it was important to create domestic alternatives at four or five steps of the process by which the United States and its allies could cut supply. That means China – and Huawei – will likely focus on focused areas such as lithography, wafer manufacturing and electronic design automation, or EDA.

Semiconductor supply chain bottlenecks in China



Mr Kurz said: *'It is important for Beijing to make progress during these critical periods.' 'They have been doing full supply chain analysis since at least 2014. The purpose of the funding is to invest where they think they can have the most impact.'*

Huawei founder Ren has a complicated relationship with the Chinese government. For years, as the United States pressed Western governments to ban Huawei telecommunications equipment over concerns it could be used to spy for the Communist Party, he maintained that his company had no standing. especially with the government.

However, when his daughter, Huawei's CFO, was detained in 2018 in Canada on US fraud charges, Beijing tried its best to pressure the Canadian and US governments to set her free. She was released in 2021 and returned to be welcomed as a hero in China.

As China aims for independence across the entire semiconductor supply chain, there is a phrase that continues to be used to describe the thrust of this big push. It's even part of the name of the task force Beijing established when Washington first blacklisted Huawei.