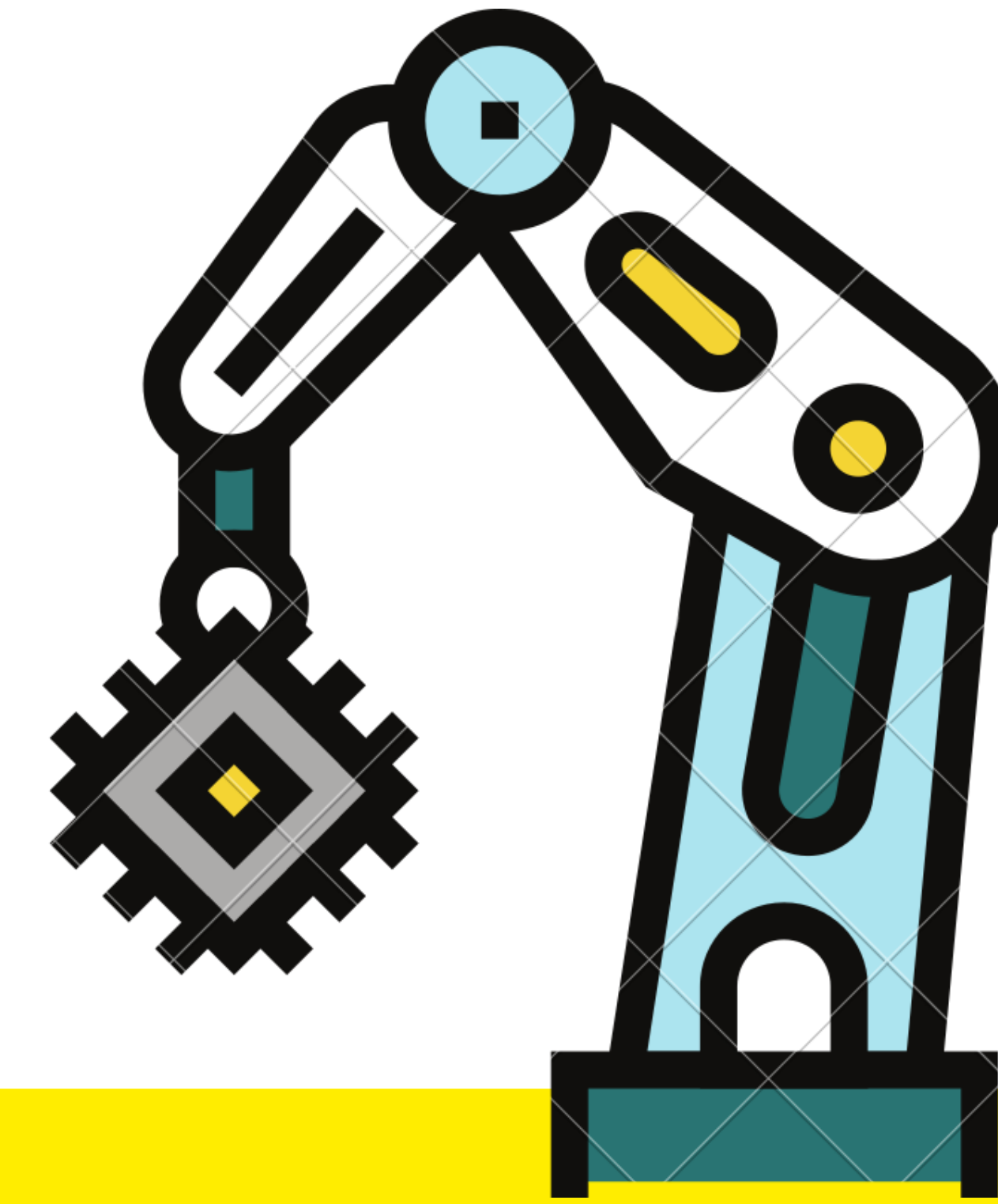


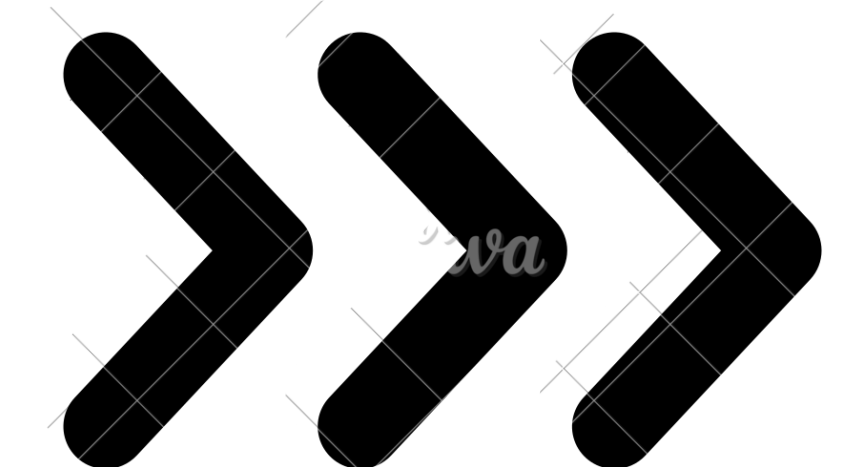
#10



**Simply explained**

# Chip Wars

**Is China's loss India's gain?**

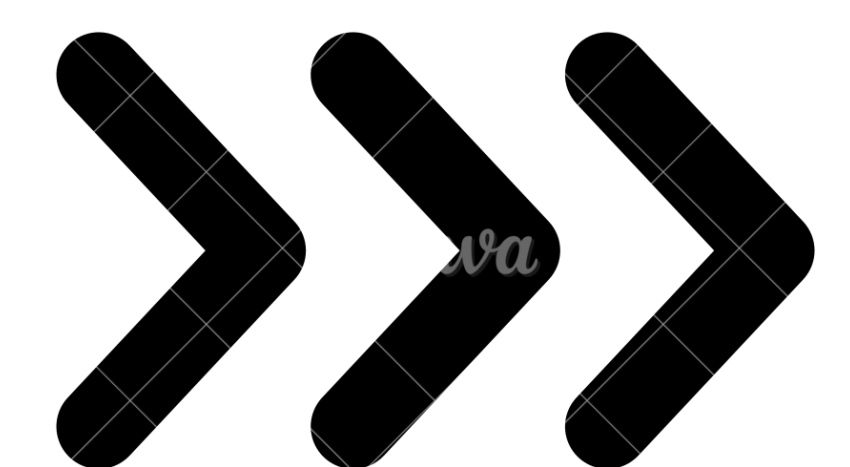


# 1,000,000,000,000

The semiconductor market is  
estimated to be **\$1 trillion** by 2030

2x the size of global fintech market

2x the size of global healthcare market

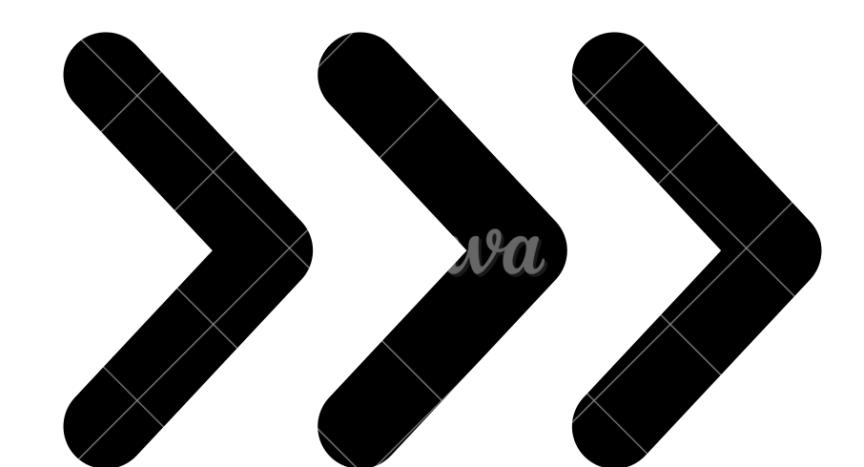


Swanky cars, fancy phones, cool gadgets, the pride of India - UPI, the latest buzz of artificial intelligence,

All of the cool innovation on the Earth you can imagine is based on one little thing

# **Chips**

And wherever there are chips,  
there is war.





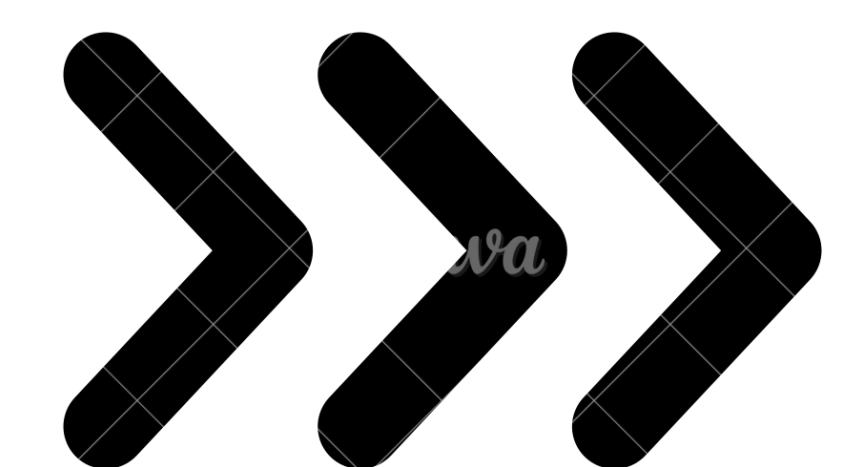
The chip industry is a geopolitical one.  
It's like 6 countries holding parts of the  
passcode.

Pretty much like *Citadel* (watched?)

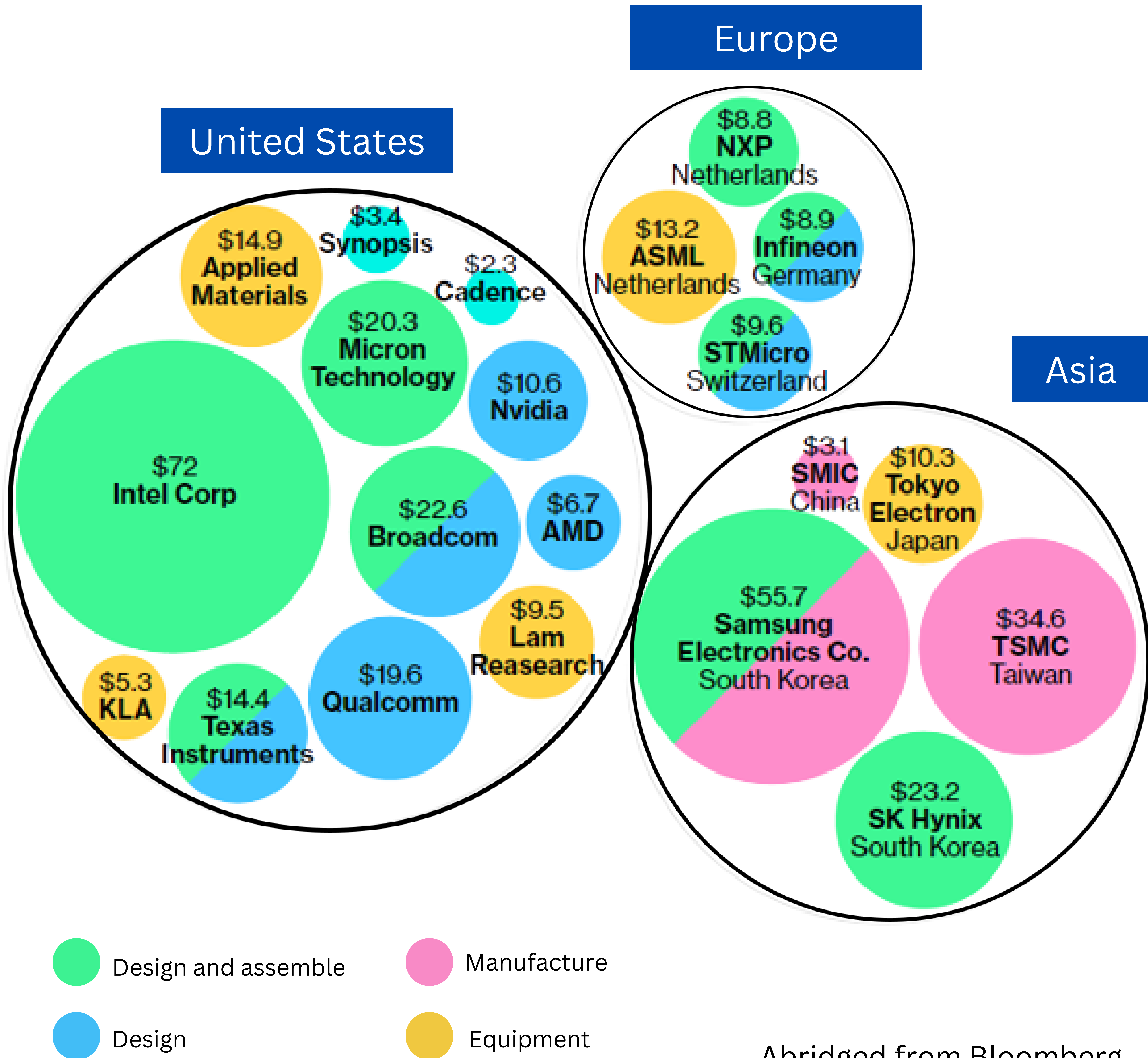
**United States** rules chip design and software

**Netherlands** rules equipment and  
components

**Taiwan, South Korea, Japan and China** rule  
manufacturing and distribution



Revenue : 2019



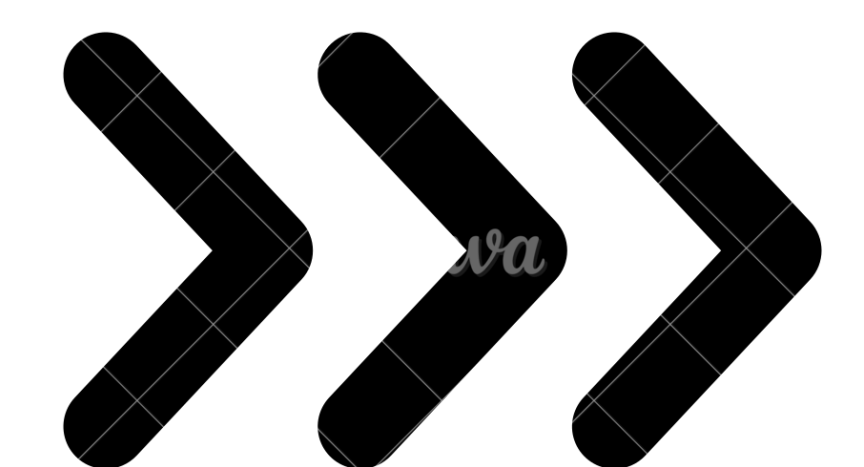
Abridged from Bloomberg

**China** has been investing heavily in the chips industry from 2014.

It has already invested over \$100bn and it plans to invest another **\$220 bn** to make China the global hub of chip manufacturing (called as **fabs** or **foundries**).

The cost of building and operating a fab in China is 37% lower than doing so in the U.S.

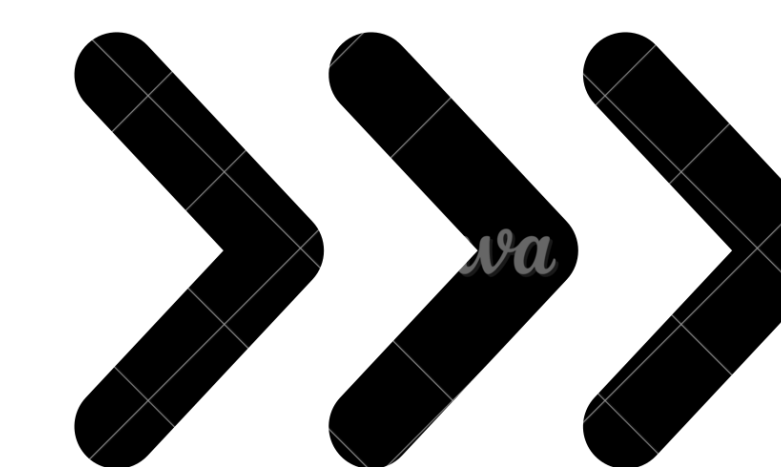
China's share in the chip market has grown from 1% to 6% in the last 5 years.





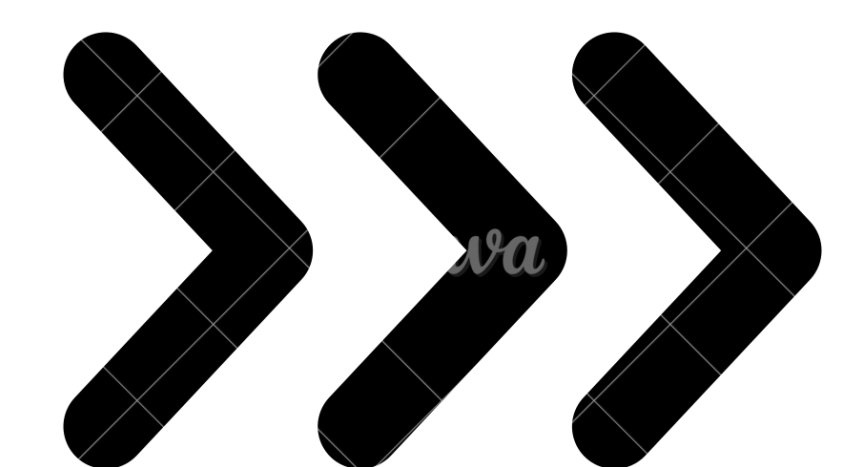
But,  
There is a catch

US does not like China



US has put **export controls** on design and software access to China, a market in which US has a dominant position.

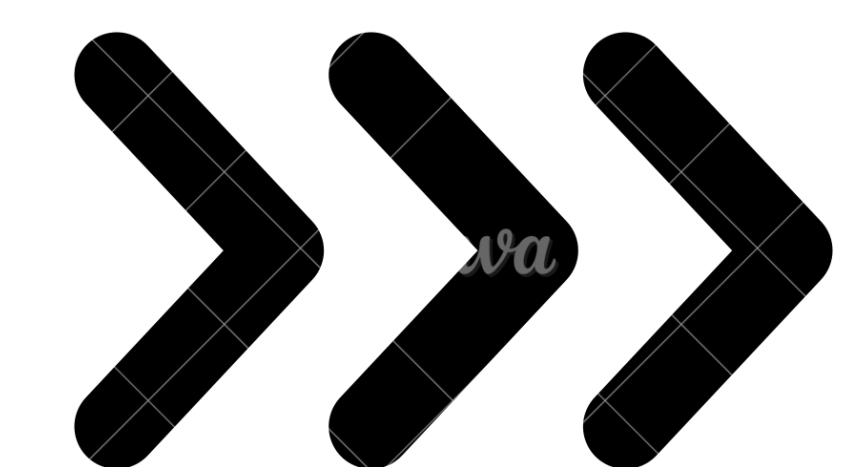
US has convinced **Japan** to put export controls on the chemicals and components that China needs to manufacture chips





There is **only one** firm in the whole world, **ASML (Netherlands)** that produces extreme ultraviolet lithography equipment critical to producing the most advanced chips.

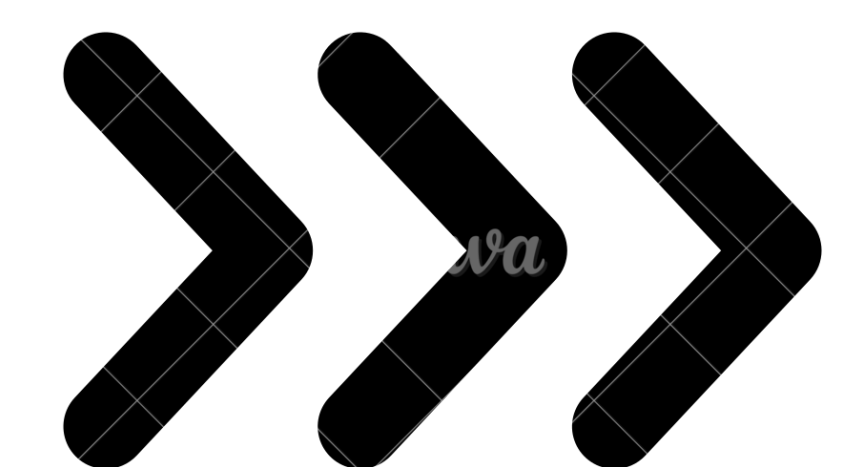
And US has convinced Netherlands to cease China's access to this equipment



And then, there is **Taiwan**.

Taiwan produces **84%** of most advanced chips globally. So much so that the semiconductor industry contributes **25%** of Taiwan's GDP.

And we all know about geopolitical relations between China and Taiwan.



So, China is in a very tricky situation.

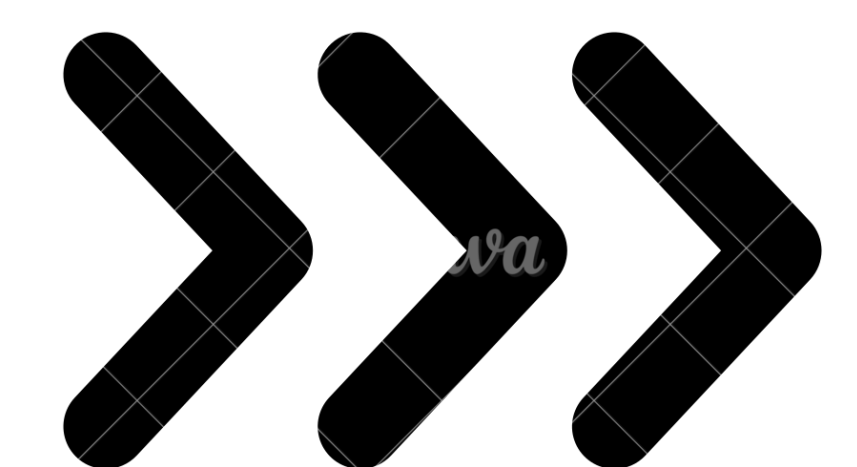
No advanced software access

No advanced equipment access

No advanced components access

**What will it do with state sponsored fabs  
when it has none of the above?**

Cyber attacks on Taiwan.





“3.20反公投台独行动”

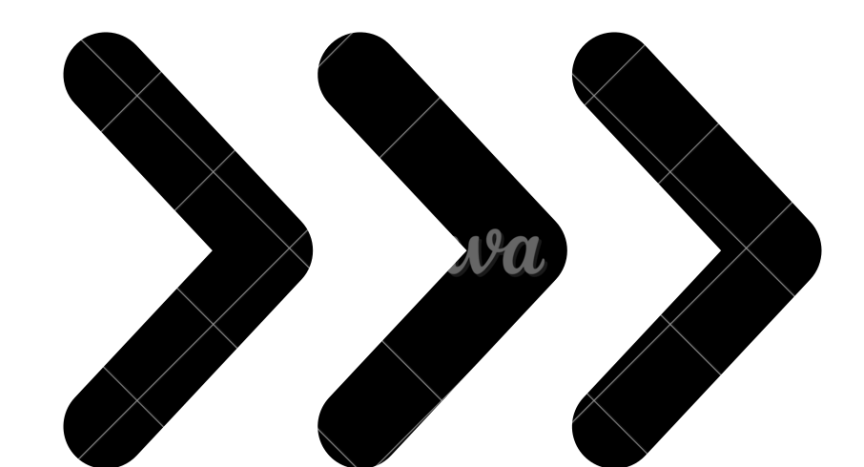


==菜黑联盟==

坚决反对“公投”台独，台湾是中国不可分割的一部分，任何企图将台湾从分裂中国分裂出去，阻碍海峡统一的妄想都必将覆灭！！我们只有一个中国！！

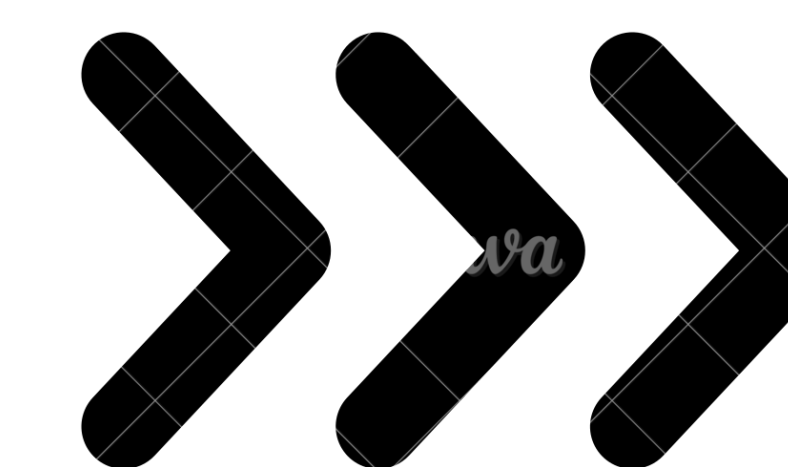
hack by oNe's wAr(550669)

A Chinese flag and a crossed Taiwan flag on the homepage of a hacked Taiwan government website, with lines reading "Taiwan is inalienable from China".



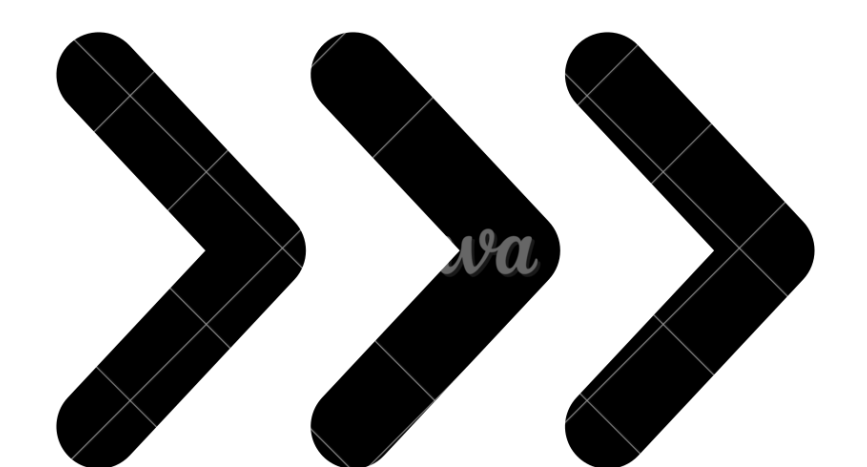
Now, a big question for us

# **Where is India?**



India has **zero** commercial chip manufacturing capabilities.

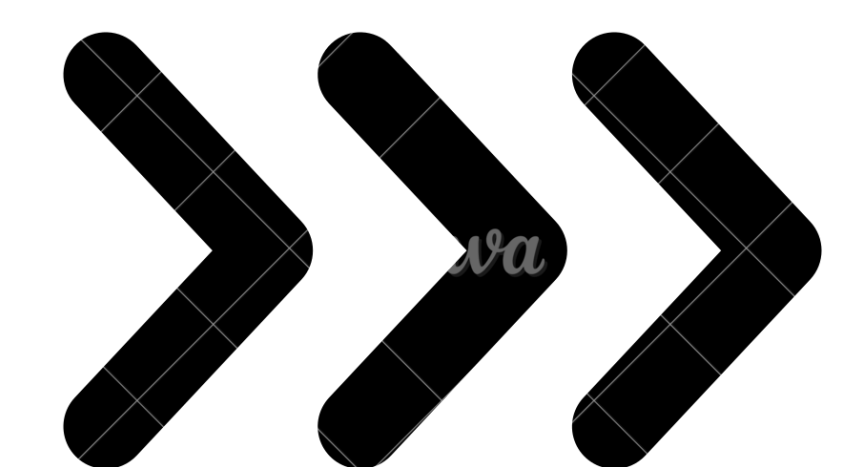
India is the **second** largest importer of semiconductors in the world.



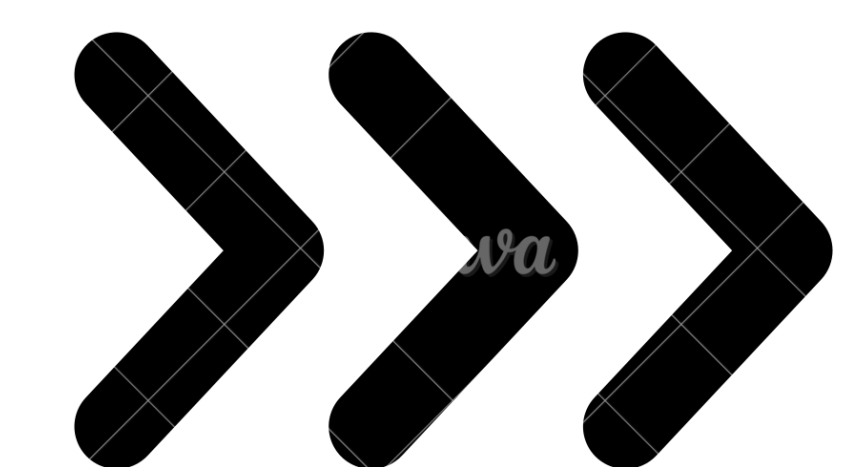


The government has announced a **\$10bn** semiconductor manufacturing plan inviting bids from the ecosystem.

India's vision is to be one of the 'biggest' semiconductor manufacturers in the world in the next 5 years.

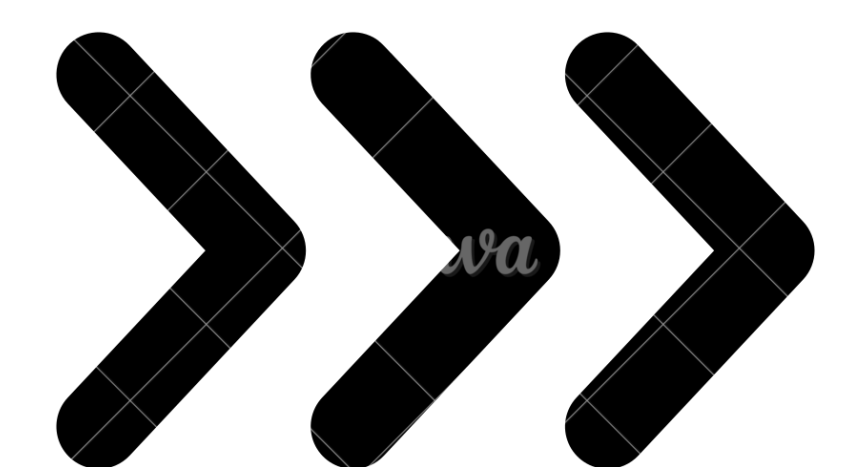


**However,**  
little has been achieved yet.



1

One fab set up costs **\$8-10 bn** alone. That's the total outlay the government has announced yet. This is not even **10%** of China's investments.

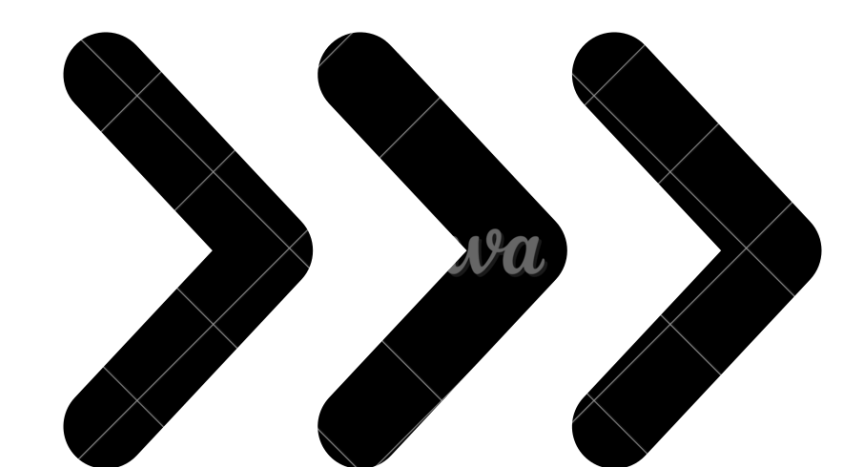




Out of the 3 bidders, only one is currently active. It is a **JV** between Vedanta and Foxconn.

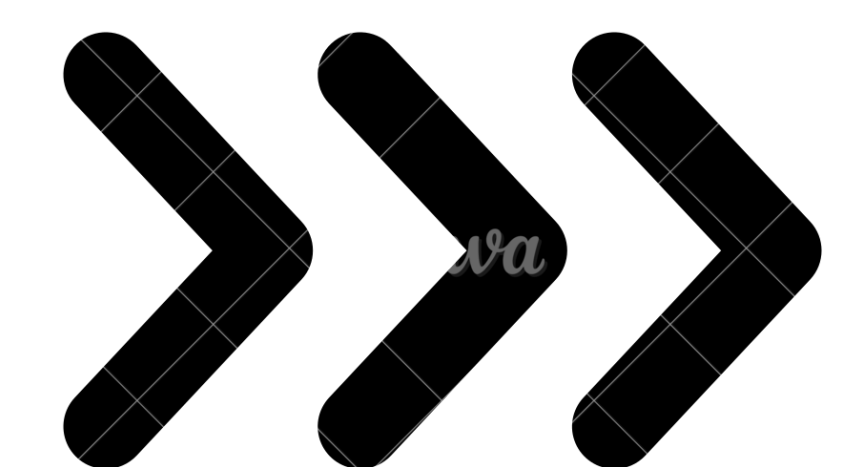
Vedanta is struggling with its current debt.

While Foxconn has proven its understanding on the manufacturing process, there are no signs of a technology partner yet.



There are over 250 special gases and chemicals involved. The whole process needs reliable power supply, and even a 3 second disruption causes the daily output to go for a toss.

There is no stable ecosystem yet to support India's ambitious plans.





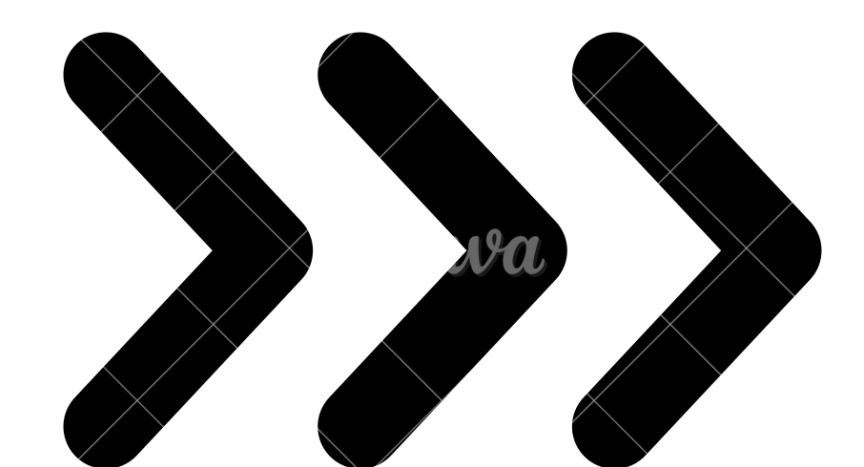
Experts argue if there is actually any need for India to be a fab leader.

Even if one starts a fab today, a chip takes 4 years to be built successfully.

While chip leaders like **Taiwan** are able to produce 3nm\* chips, India is talking about a 40nm\* chip right now, so there is a lot of gap to cover.

\*Smaller the size, more costly and advanced the chip is

Source : RestofWorld



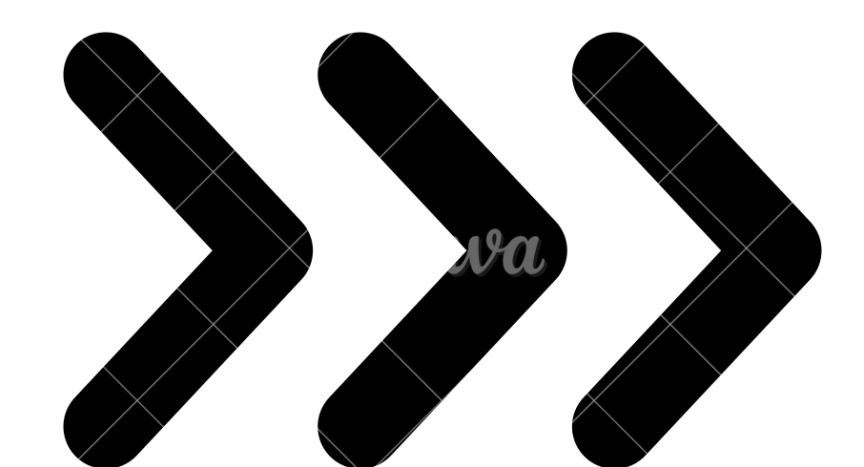


Instead, India should look for more lucrative opportunities in the chip supply chain.

Such as **chip design**

Such as **chip testing** and **assembly**.

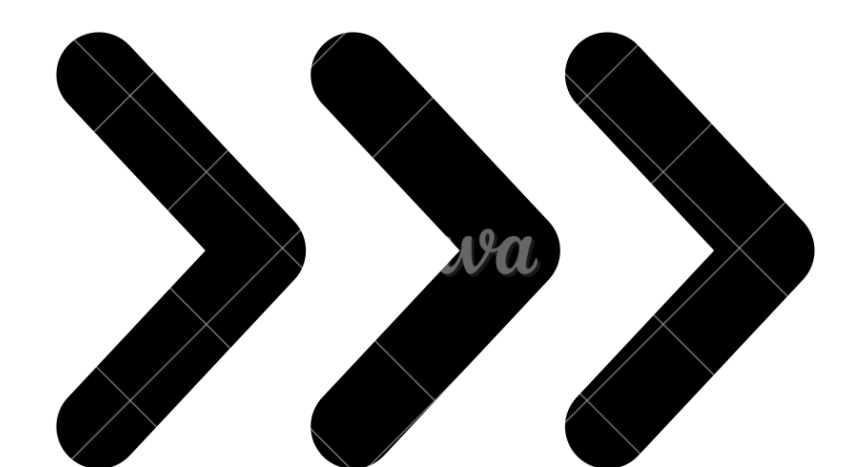
Apple's foray in India can be a good starting point to explore such opportunities.



Data is not the new oil.

**Chips** are.

India can use the opportunity to tap the **\$1 trillion** industry, but are there any takers?



# Hello!

I am Kriti Arneja

I love demystifying  
macro events.

If you found what I wrote  
today useful,  
give me a high five :)  
It motivates me to write more.  
**And better.**

