

Analysis of today Assessment of tomorrow



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# Tracking the geographic location of chips is shaping the global market for AI technologies



The proposed law to track the location of AI chips is an important step in American control over the most sophisticated technological components.

On 9 May, Senator Tom Cotton introduced the Chip Security Act, which would require the installation of geographic location verification mechanisms on all advanced AI chips subject to export controls and on the devices that use those chips with a six-month deadline for compliance.

The goal of this initiative is to prevent the unauthorised redirection, smuggling and misuse of American AI resources, particularly on Chinese territory, while preserving Washington's technological edge.

The law requires the US Department of Commerce to develop clear technical guidelines for the implementation of "location verification mechanisms".

Exporters must report any attempt at diversion or illegal access to the Bureau of Industry and Security (BIS), while the Department of Defence is to conduct a study on additional safeguards every three years and publish annual recommendations.

Such a combination of regulatory and expert oversight is intended to cover the legal, security and industrial aspects of implementation.

The background to the adoption of the law is multiple cases in which the latest Nvidia chips were smuggled into China via grey markets.

These incidents have shown that the existing export control system is not robust enough, meaning that some of America's most important technology goods could end up in the hands of government and private entities developing military or civilian AI projects without oversight.

Hardware tracking mechanisms have an advantage over software barriers – physically disabling the chip outside the authorised zone reduces the risk of circumvention.

#### The industry disapproves

There are strong arguments from the industry about costs and logistical challenges. The installation of GPS modules or alternative solutions requires additional space on the circuit board, higher power consumption and stricter quality tests.

Manufacturers such as Nvidia state that chip prices could rise by up to 20%, which would immediately delay the adoption of AI platforms in sectors ranging from defence to healthcare diagnostics.

#### There is a risk that malicious actors could disrupt tracking before the chip reaches the unauthorised zone

To avoid too much fragmentation in the supply chain, manufacturers are considering relocating production facilities outside US borders and expanding research centres in countries with more flexible export regulations.

A major challenge also lies in the technical reliability of monitoring. GPS accuracy decreases rapidly indoors or underground, while radio frequency systems can be blocked or disrupted.

There is a real risk that hackers or malicious actors could disable or disrupt tracking before the chip reaches the unauthorised zone, rendering the entire system useless.

#### Inflationary pressure

Another layer of complexity is the protection of trade secrets and data privacy. Constant communication about the exact location of the chip could lead to the inadvertent disclosure of sensitive information and the routine workflows of research teams necessary for military or confidential commercial projects.

To address these concerns, it is proposed to

encrypt location reporting channels and limit the scope of data transmitted to geographic coordinates, but such measures will require additional resources and time to implement.

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On the economic side, the introduction of additional costs could increase inflationary pressures in sectors that already use AI solutions, such as financial services, the automotive industry and consumer electronics.

In the medium term, however, the introduction of stricter controls can prevent production disruptions and litigation that arise when detected illegal transfers lead to the withdrawal of devices from the market or to high compensation payments.

## Control in global chains

From a European perspective, the EU is currently considering a revision of export control regulations for high technology.

Harmonisation of European standards with American standards would tend to lead to common monitoring mechanisms, which would reduce the fragmentation of regulations and increase the credibility of controls in global chains.

Japan and South Korea, as the largest manufacturers of semiconductors, are watching the American initiative closely to protect their interests and avoid the creation of a technical "island" that would undermine international cooperation. How quickly the US administration will be able to thoroughly engage the industry in refining the technical specifications?

The question that remains is how quickly the US administration will publish applicable guidelines and how quickly it will be able to thoroughly engage the industry in refining the technical specifications.

Congress is likely to initiate discussions on amendments that would relax the requirements for certain classes of chips or extend the deadlines for harmonisation, which could lead to a compromise that loses the original sharpness of the measures established.

### The law will not be enough

Should the Trump administration decide to extend this regulation to other categories of advanced technologies – such as quantum processors or specialised AI accelerators – it would mark a permanent paradigm shift in the way technological progress is regulated.

In this case, the US could dictate global standards, and countries that do not accept such regulation would find themselves on the sidelines of the development of critical industries.



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#### - Senator Tom Cotton

In the short term, we can expect intense debates in both houses of Congress and pressure from lobbyists proposing exemptions. In the medium term, it is possible to sign bilateral or trilateral agreements between the US, the EU, and Japan on technical cooperation and harmonisation of standards.

In the long term, the development of this initiative will depend on China's strategy to develop its own semiconductors – its massive government incentives could lead to alternative tracking and encryption technologies that circumvent US restrictions.

The success of the Chip Security Act will therefore be measured not only by the passage of the law but also by the ability of the US government to implement it quickly and transparently with the support of key industry players.

If this challenge is successfully met, the global technology scene can turn to new mechanisms of trust and control. Otherwise, politicisation and technical escalation will continue to define rivalries in AI development.