



<https://afsa.org/diplomacy-cyberspace>

EMERGING TRENDS AND GEOPOLITICAL CHALLENGES IN CYBER DIPLOMACY

# Emerging Technologies and the Balance of Power

***Arnaut Moreira***

ESDC - IDN – Jan 2024

Brussels

# Agenda

1. **Technologies and Power**
2. **Emerging Technologies in Cyberspace**
3. **Power Strategies**
4. **Final Remarks**

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- 1. Technologies and Power**
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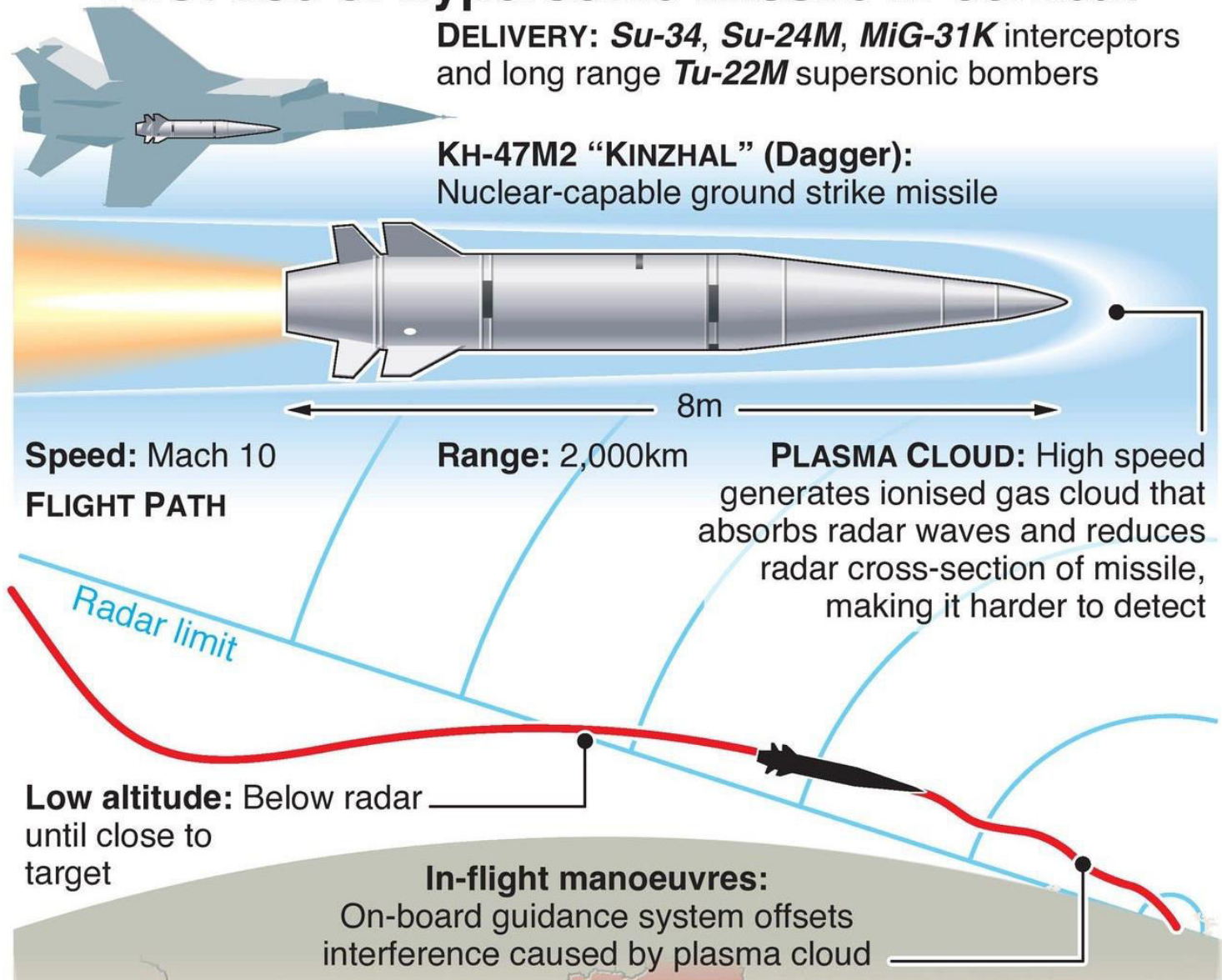


# Technologies and Power

## First use of hypersonic missile in combat

**DELIVERY:** *Su-34*, *Su-24M*, *MiG-31K* interceptors and long range *Tu-22M* supersonic bombers

**KH-47M2 “KINZHAL” (Dagger):**  
Nuclear-capable ground strike missile



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# **Some Current Trends in Cyberspace**

**Communications and Mobility**

**Internet of Things and Artificial Intelligence**

**Blockchain**

**Augmented Reality**

**Natural Interfaces**

**Quantum Computing**

# The Digital World

JAN  
2023

## ESSENTIAL DIGITAL HEADLINES

OVERVIEW OF THE ADOPTION AND USE OF CONNECTED DEVICES AND SERVICES



TOTAL  
POPULATION



we  
are  
social

**8.01**  
BILLION

URBANISATION

**57.2%**

UNIQUE MOBILE  
PHONE USERS



Meltwater

**5.44**  
BILLION

vs. POPULATION

**68.0%**

INTERNET  
USERS



KEPIOS

**5.16**  
BILLION

vs. POPULATION

**64.4%**

ACTIVE SOCIAL  
MEDIA USERS



KEPIOS

**4.76**  
BILLION

vs. POPULATION

**59.4%**

10

**SOURCES:** UNITED NATIONS; GOVERNMENT BODIES; GSMA INTELLIGENCE; ITU; WORLD BANK; EUROSTAT; CNNIC; APJII; IAMA & KANTAR; CIA WORLD FACTBOOK; COMPANY ADVERTISING RESOURCES AND EARNINGS REPORTS; OECD; BETA RESEARCH CENTER; KEPIOS ANALYSIS. **ADVISORY:** SOCIAL MEDIA USERS MAY NOT REPRESENT UNIQUE INDIVIDUALS. **COMPARABILITY:** SIGNIFICANT REVISIONS TO SOURCE DATA, INCLUDING COMPREHENSIVE REVISIONS TO POPULATION DATA. FIGURES ARE NOT COMPARABLE WITH PREVIOUS REPORTS. ALL FIGURES USE THE LATEST AVAILABLE DATA, BUT SOME SOURCE DATA MAY NOT HAVE BEEN UPDATED IN THE PAST YEAR. SEE [NOTES ON DATA](#) FOR FULL DETAILS.

we  
are  
social

Meltwater

# Mobile Phones on the lead

JUL  
2022

## SHARE OF WEB TRAFFIC BY DEVICE

PERCENTAGE OF TOTAL WEB PAGES SERVED TO WEB BROWSERS RUNNING ON EACH KIND OF DEVICE



MOBILE  
PHONES



**59.72%**

YEAR-ON-YEAR CHANGE

**+7.9%**

**+437 BPS**

LAPTOP AND  
DESKTOP COMPUTERS



**37.98%**

YEAR-ON-YEAR CHANGE

**-9.4%**

**-395 BPS**

TABLET  
DEVICES



**2.27%**

YEAR-ON-YEAR CHANGE

**-14.0%**

**-37 BPS**

OTHER  
DEVICES



**0.03%**

YEAR-ON-YEAR CHANGE

**-62.5%**

**-5 BPS**

43

**SOURCE:** STATCOUNTER. **NOTES:** FIGURES REPRESENT THE NUMBER OF WEB PAGES SERVED TO BROWSERS RUNNING ON EACH TYPE OF DEVICE COMPARED WITH THE TOTAL NUMBER OF WEB PAGES SERVED TO BROWSERS RUNNING ON ANY DEVICE IN JUNE 2022. PERCENTAGE CHANGE VALUES REPRESENT RELATIVE CHANGE (I.E. AN INCREASE OF 20% FROM A STARTING VALUE OF 50% WOULD EQUAL 60%, NOT 70%). "BPS" VALUES REPRESENT BASIS POINTS, AND INDICATE THE ABSOLUTE CHANGE. FIGURES MAY NOT SUM TO 100% DUE TO ROUNDING.

**we  
are  
social**

**Hootsuite®**

<https://datareportal.com/reports/digital-2022-july-global-statshot>

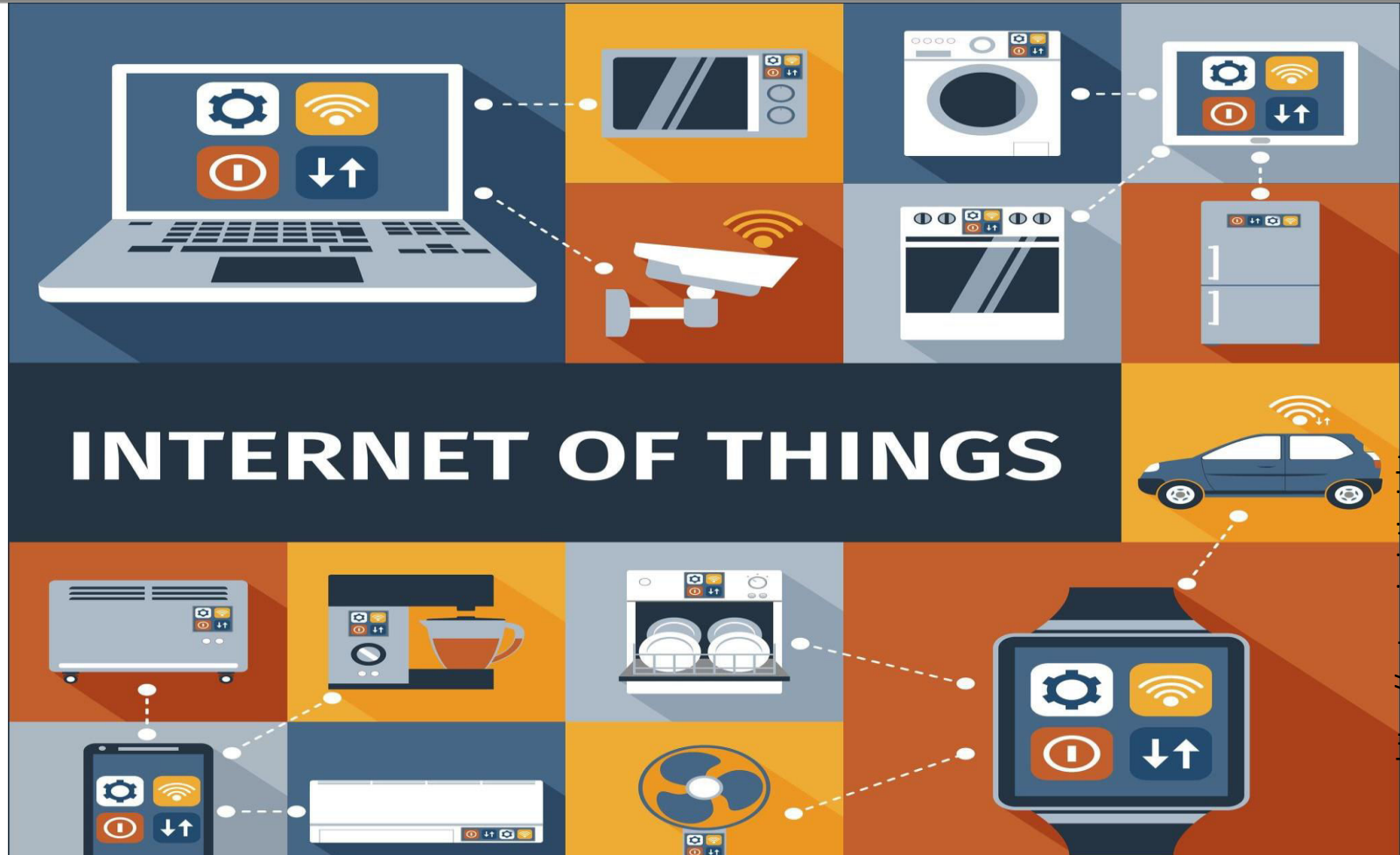


# 5G Revolution



- 4G accommodate a few thousand IoT devices per square mile,
- 5G will provide connectivity for millions of devices per square mile.
- 4G networks have latency rates between 50-100 milliseconds,
- 5G would reduce that to just 1-4 milliseconds, a crucial difference when it comes to systems that need instantaneous reaction, such as autonomous vehicles and remote surgery.

# The IOT Trend

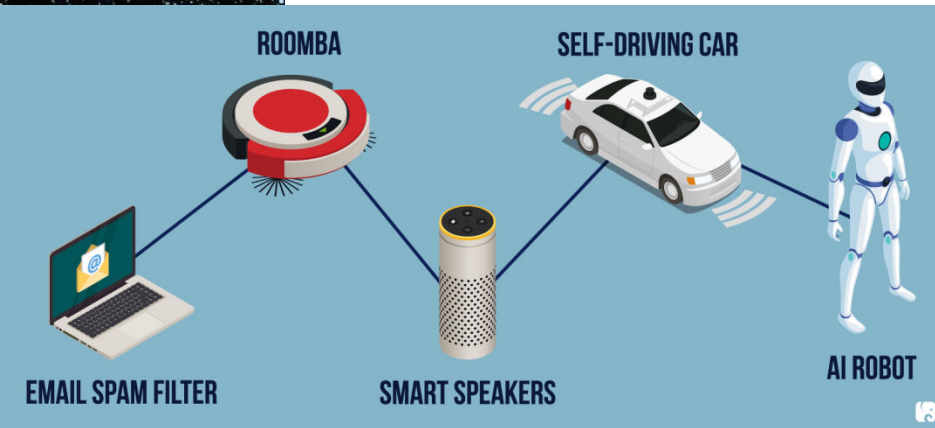


2023: 50 billion connected devices  
What is the security of a gadget ?



# Artificial Intelligence

**Ability of an object to take adequate decisions taking into account its changing environment. May involve “learning”.**



**The ability of a machine to perceive, evaluate, and act more quickly and accurately than a human represents a competitive advantage in any field—civilian or military.**

# Generative Artificial Intelligence

- **Generative AI focuses on creating new and original content.**
- **It's particularly valuable in creative fields.**
- **It can generate many types of new outputs.**

**Draft an email  
requesting a deadline extension for  
my project**

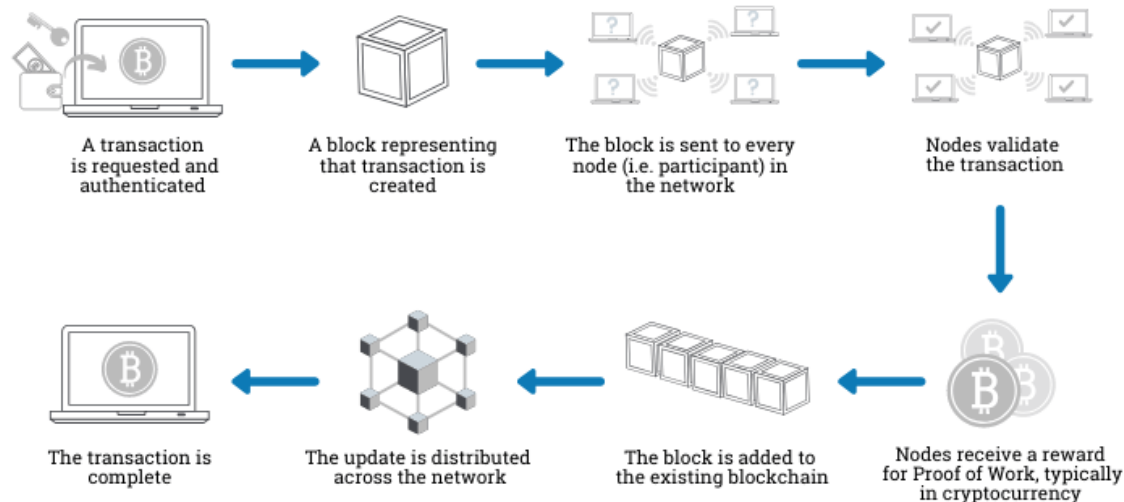
**Generative AI often starts with a prompt that lets a user or data source submit a starting query or data set to guide content generation.**



# Blockchain

In Standard Databases “someone” is responsible for keeping it (and eventually can change the data)

## How does a transaction get into the blockchain?



© Euromoney Learning 2020































<https://www.euromoney.com/learning/blockchain-explained/how-transactions-get-into-the-blockchain>

For a public blockchain, the decision to add a transaction to the chain is made by consensus. This means that the majority of “nodes” (or computers in the network) must agree that the transaction is valid. The people who own the computers in the network are incentivized to verify transactions through rewards. This process is known as ‘proof of work’.

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# Largest Companies by Market Value in 2023

Rank	Name	Market Cap	Price	Today	Price (30 days)	Country
1	 <b>Apple</b> AAPL	\$2.143 T	\$134.76	▲ 1.01%		 USA
2	 <b>Saudi Aramco</b> 2222.SR	\$1.881 T	\$8.55	▼ 0.16%		 S. Arabia
3	 <b>Microsoft</b> MSFT	\$1.783 T	\$239.23	▲ 0.30%		 USA
4	 <b>Alphabet (Google)</b> GOOG	\$1.195 T	\$92.80	▲ 0.97%		 USA
5	 <b>Amazon</b> AMZN	\$1.000 T	\$98.12	▲ 2.99%		 USA
6	 <b>Berkshire Hathaway</b> BRK-B	\$700.57 B	\$317.64	▼ 0.40%		 USA
7	 <b>Visa</b> V	\$472.35 B	\$223.06	▼ 0.25%		 USA
▲2 8	 <b>Exxon Mobil</b> XOM	\$465.98 B	\$113.15	▼ 0.06%		 USA
▼1 9	 <b>Tencent</b> TCEHY	\$458.31 B	\$47.80	▲ 2.85%		 China
▼1 10	 <b>UnitedHealth</b> UNH	\$457.42 B	\$489.57	▼ 1.23%		 USA

<https://companiesmarketcap.com/>

# 5G Wars

## The Huawei ban begins on May 15, 2019



On May 15, 2019, President Trump issued an [executive order](#) that bans the use of telecommunications equipment from foreign firms deemed a national security risk. The order itself doesn't mention Huawei (or even China) specifically. However, the US Department of Commerce created what it refers to as an "Entity List" related to the order that does contain Huawei's name.

Since the order didn't reference Huawei specifically, its effect on the company and its various lines of business wasn't totally clear. It appeared the order was mostly directed towards Huawei's telecom operations, which would mean its wireless networking equipment, especially those related to 5G.





**The  
Guardian**

10Aug2023

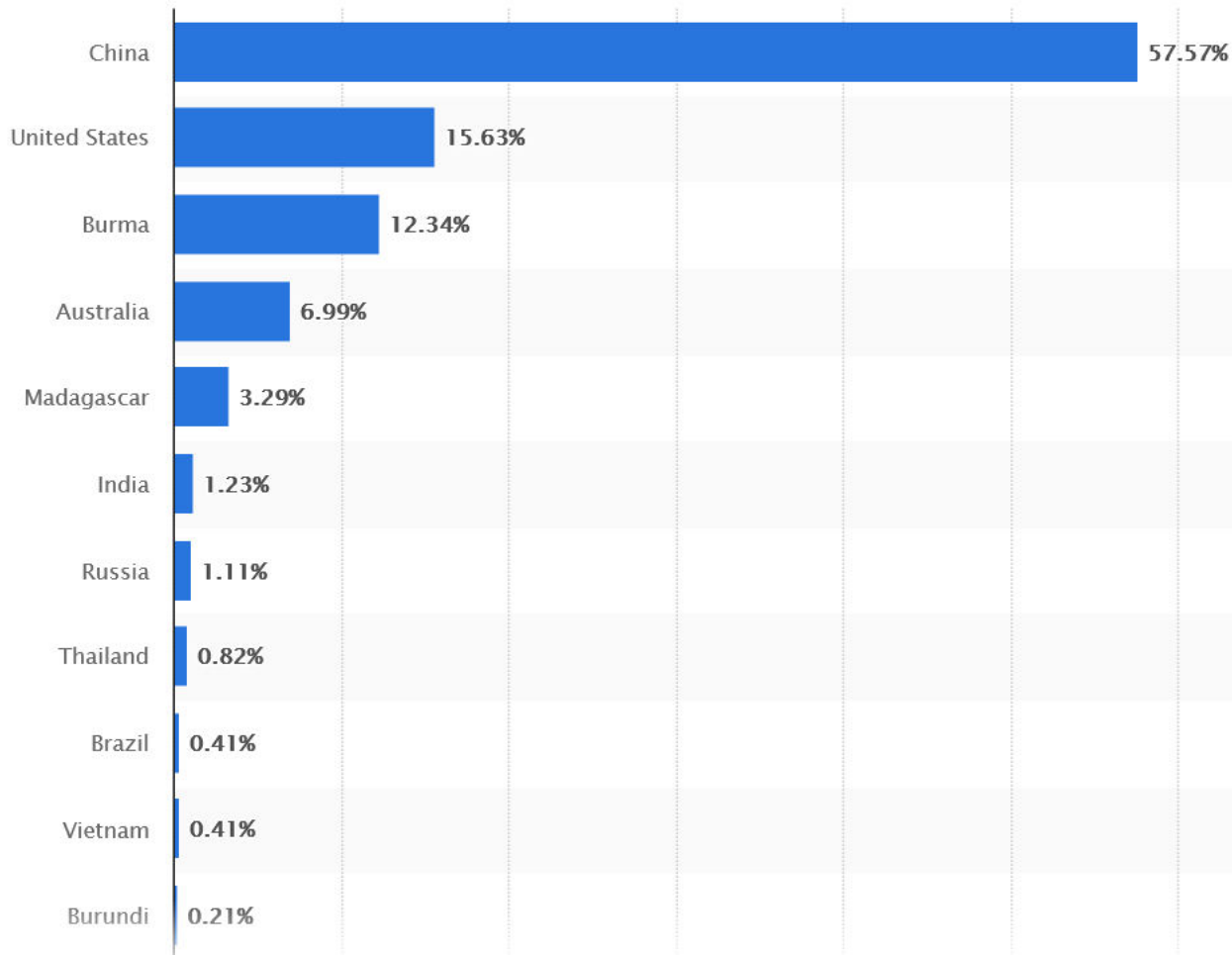
## **Biden's China investment ban: who's targeted and what does it mean for the 2024 US election?**

Joe Biden has moved to restrict US investment in Chinese technology, signing an executive order which focuses on sensitive hi-tech:

- including semiconductors,
- quantum computing
- and artificial intelligence (AI)

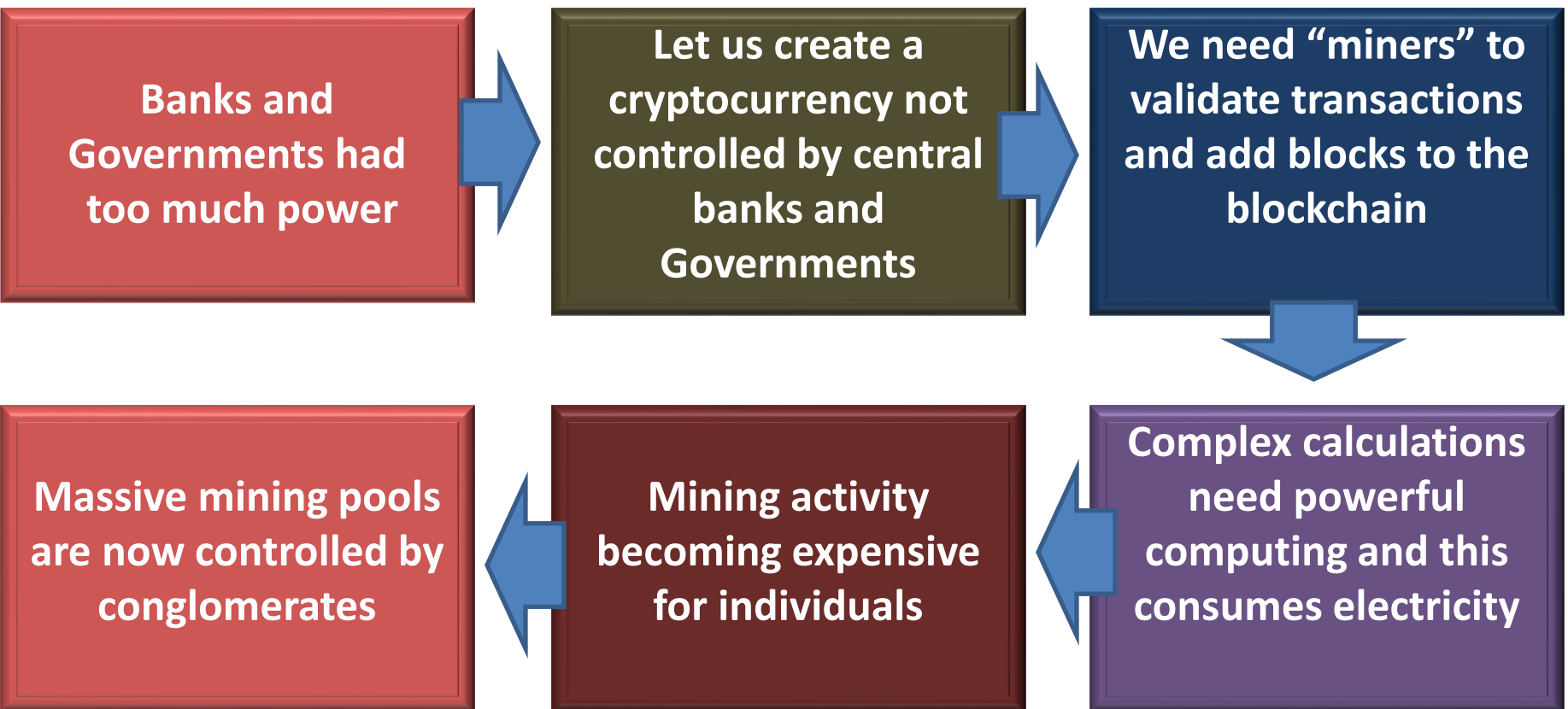
# Rare Earth Production Worldwide

Distribution of rare earths production worldwide as of 2020,



# Blockchain Wars and Mining trends

In late 2008 Satoshi Nakamoto published [Bitcoin: A peer-to-peer electronic cash system.](#)



# CHINA: The Great Firewall

**Deng Xiaoping in the early 1980s, "If you open the window, both fresh air and flies will be blown in"**

**Content Censorship**

**Blocking Websites**

**Foreign Websites loading times**



# Russia: RUNET, a National Internet ?



23\_12\_2019

## Новости

00:31 В Бейруте прошел митинг в память о геноциде армян

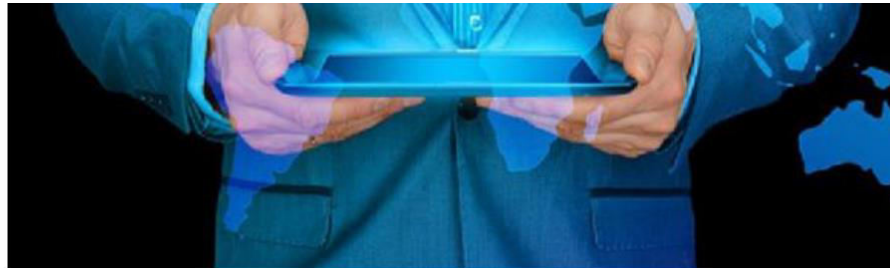
00:13 Четверо детей погибли в огне под Пермью

23:55 Захарова вспомнила чешского классика, комментируя ситуацию в Чехии

## В России прошли первые учения по защите суверенного рунета

© 23.12.2019 20:54  
ПОЛИТИКА

Сегодня, 23 декабря, прошли первые учения по защите российского сегмента интернета, сообщил заместитель главы Министерства цифрового развития, связи и массовых коммуникаций Алексей Соколов.



"Выяснилось, что в целом и органы власти, и операторы связи готовы эффективно реагировать на возможные риски и угрозы и обеспечивать функционирование сети интернет и единой сети электросвязи в России", — утверждает Соколов.

"It turned out that, in general, both the authorities and telecom operators are ready to effectively respond to possible risks and threats and ensure the functioning of the Internet and the unified telecommunication network in Russia," Sokolov says. Read more at <https://www.pravda.ru/news/politics/1461663-runet/>

# North Korea: Closes every door

**Internet access is not generally available in North Korea.**

**Only some high-level officials are allowed to access the global internet.**

**Universities: a small number of strictly monitored computers are provided.**

**Other citizens: access to the country's national intranet (Kwangmyong).**

<https://www.quora.com/Is-Instagram-illegal-in-North-Korea>

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**Vulnerabilities will not disappear. They may increase.**

**The Internet creator's never envisioned the need to provide Internet with reliable means for tracing the origin of a message.**

**Attribution – determining the source, location, and the identity of an attacker – is extremely difficult.**

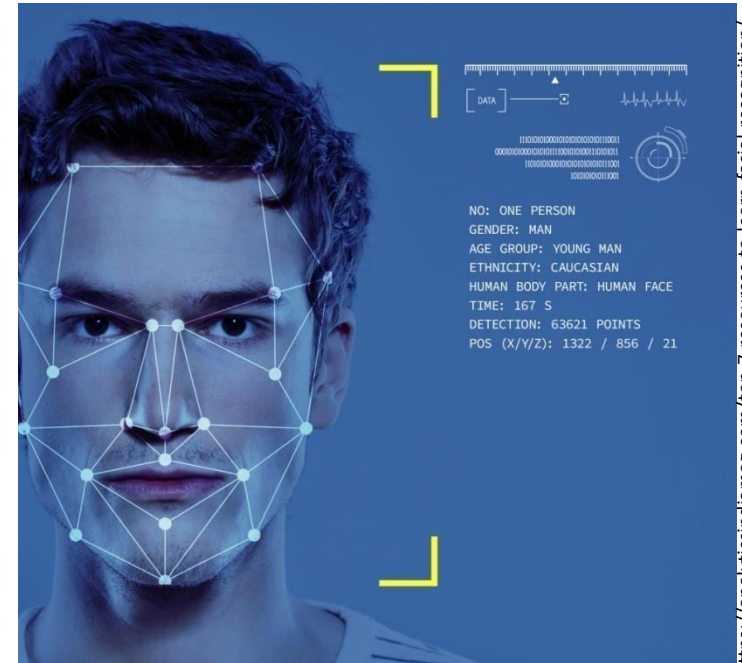
**111 billion lines of new software code being produced each year — which introduces a massive number of vulnerabilities that can be exploited.**

<https://cybersecurityventures.com/hackerpocalypse-cybercrime-report-2016/>



# Who controls the producers?

## Banned Chinese Security Cameras Are Almost Impossible to Remove



Several years ago the Department of Homeland Security tried to force all federal agencies to secure their networks by tracking every connected device. As of December 2018, only 35 percent of required agencies had fully complied with this mandate ... As a result, **most U.S. federal agencies still don't know how many or what type of devices are connected to their networks (18Jul2019)**



<https://techcrunch.com/2019/05/03/china-smart-city-exposed/>



*Benjamin Franklin*

# This Conference is on the Web

1st Step – Google “Blog Arnaut”



Blog Arnaut



2nd Step – Click “Geopolítica”

## Quinta dos Arnaut

*Uma quinta sobre a montanha*

Blog / Arboreto / Fauna / Contacto / Documentos / **Geopolítica**

3rd Step – Look for “Conferências”

### **Conferências**

2019\_04\_10 Universidade Nova: Uma Geopolítica Africana

Geopolítica de África v5

2019\_04\_03 Universidade Autónoma: O Crime Organizado Transnacional





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