



<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 2025

Brussels

Agenda

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

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Technologies and Power

Power can be defined as the ability to force or persuade others to follow a preferred course of action they would not have otherwise chosen.

Technologies enhance economy strength and military power

Technologies may change Perceptions and Will

The Digital World 2024

JUL
2024

ESSENTIAL DIGITAL HEADLINES

OVERVIEW OF THE ADOPTION AND USE OF CONNECTED DEVICES AND SERVICES



TOTAL
POPULATION



we
are
social

8.12
BILLION

URBANISATION
57.9%

UNIQUE MOBILE
PHONE SUBSCRIBERS



Meltwater

5.68
BILLION

vs. POPULATION
70.0%

INDIVIDUALS USING
THE INTERNET



KEPIOS

5.45
BILLION

vs. POPULATION
67.1%

SOCIAL MEDIA
USER IDENTITIES



5.17
BILLION

vs. POPULATION
63.7%

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Some Current Trends in Cyberspace

Communications and Mobility

Internet of Things and Artificial Intelligence

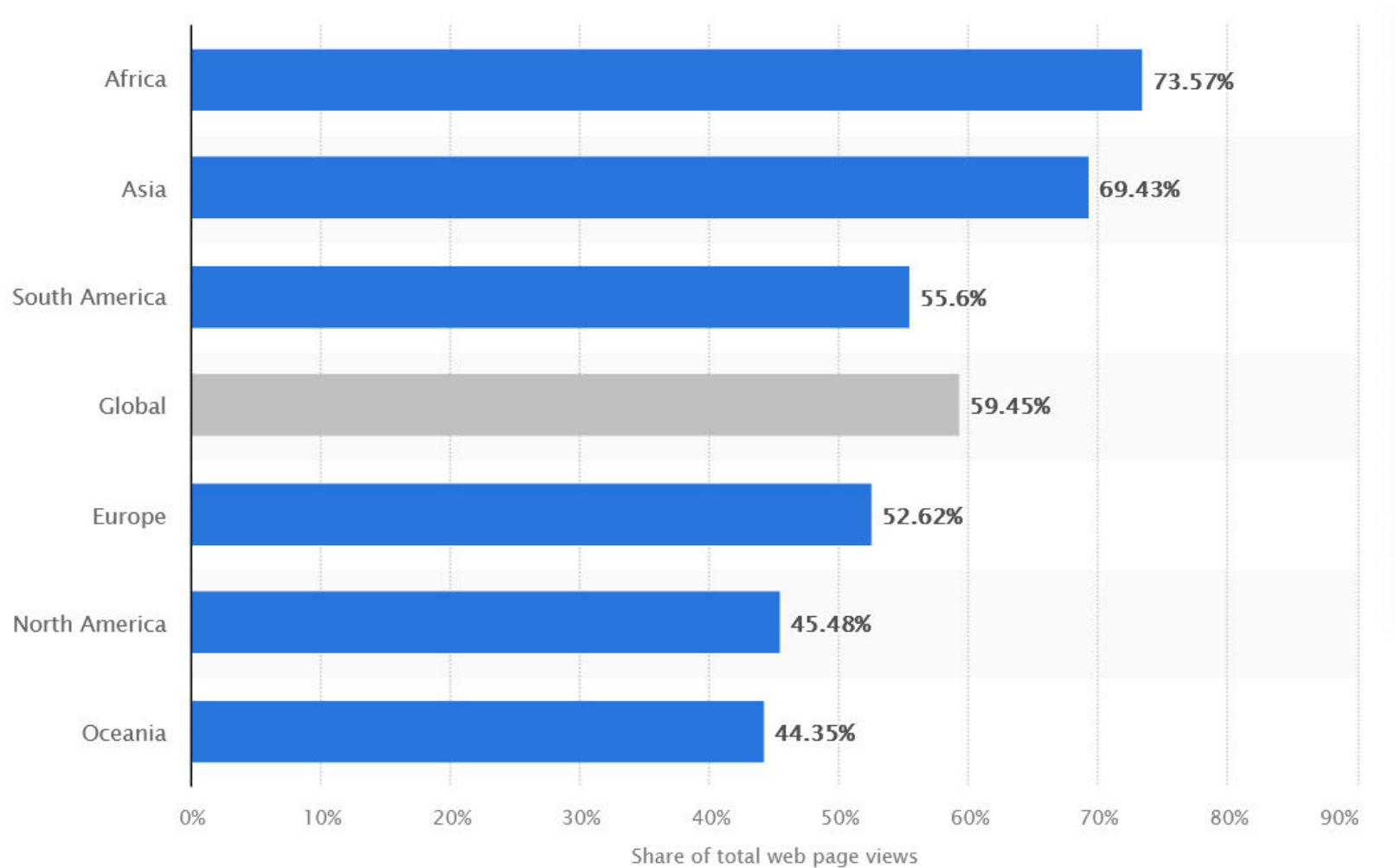
Blockchain

Augmented Reality

Natural Interfaces

Quantum Computing

Mobile Phones on the lead (60% Web Traffic 2024)

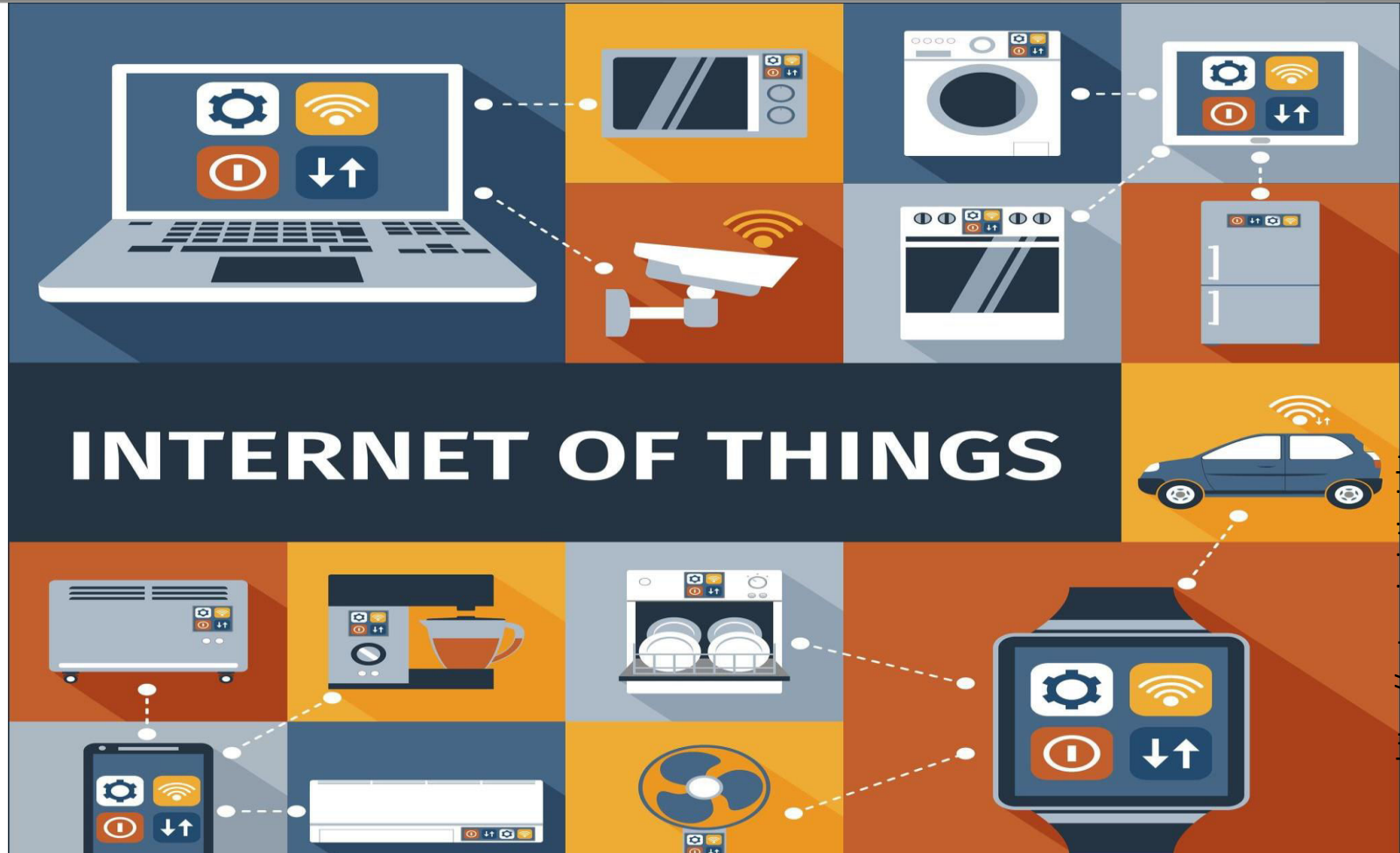


5G Revolution including Satellite



- 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.

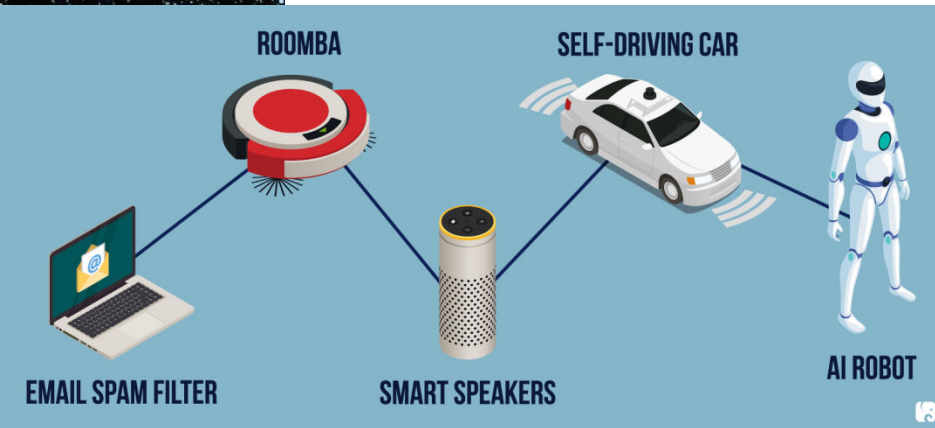
The IOT Trend



**IOT Summer Report 2024:
19 billion connected devices**

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.**

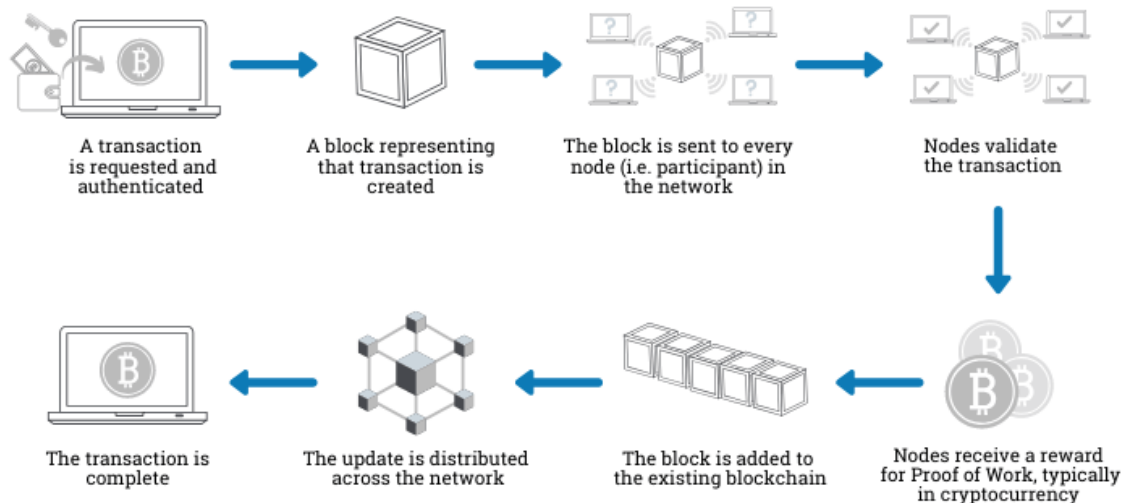
**Draft an email
requesting a deadline extension for
my project**

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

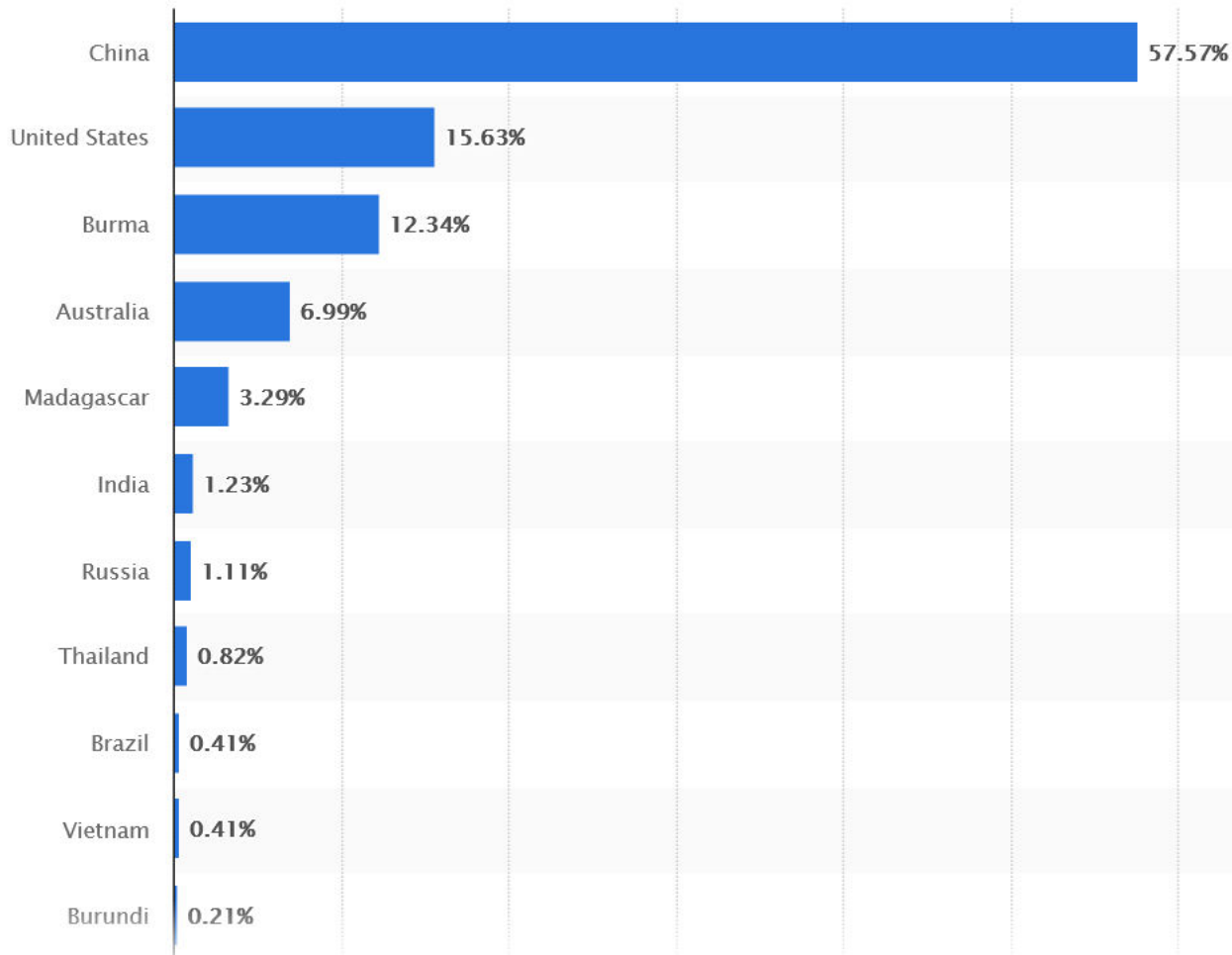
Biden's China investment ban: who's targeted and what does it mean for the 2024 US election?

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)

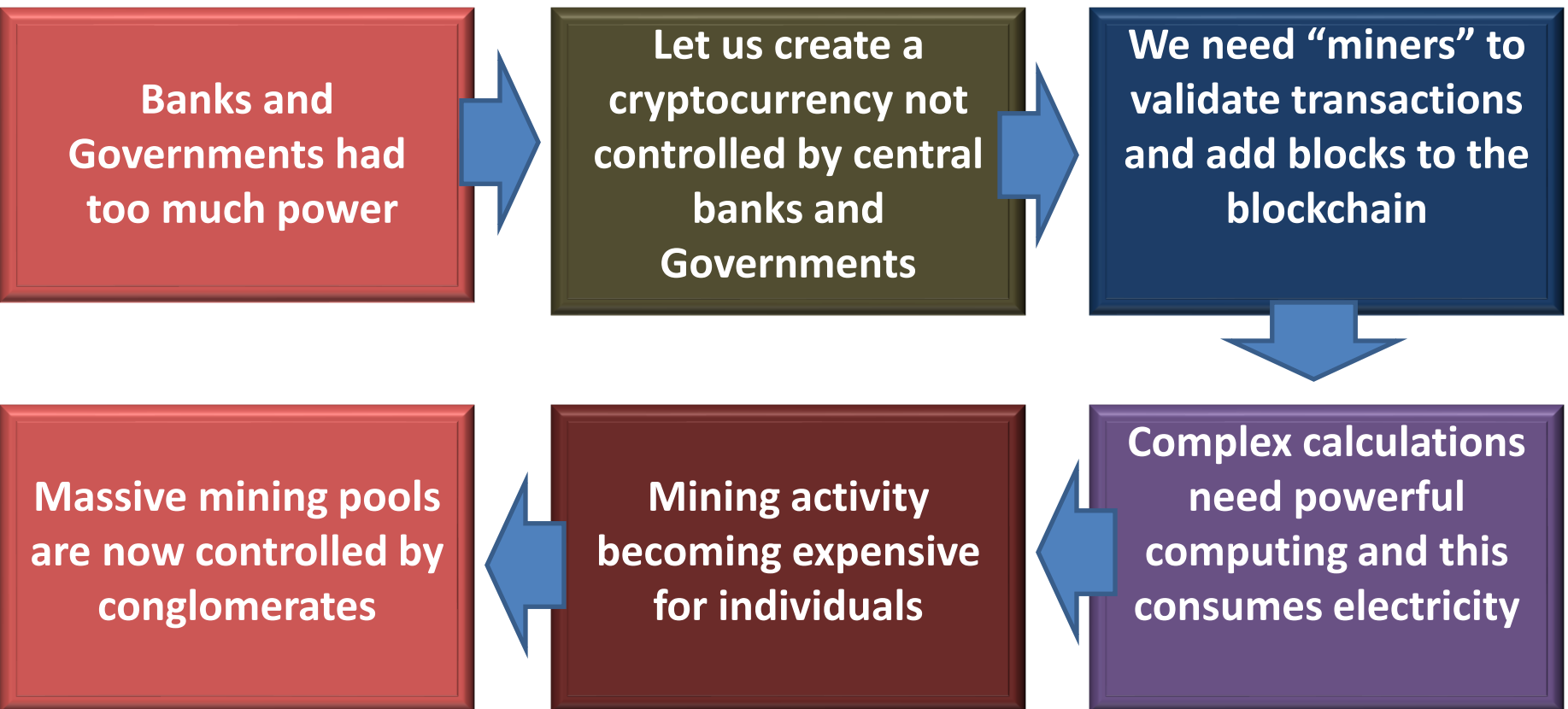
Rare Earth Production Worldwide

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

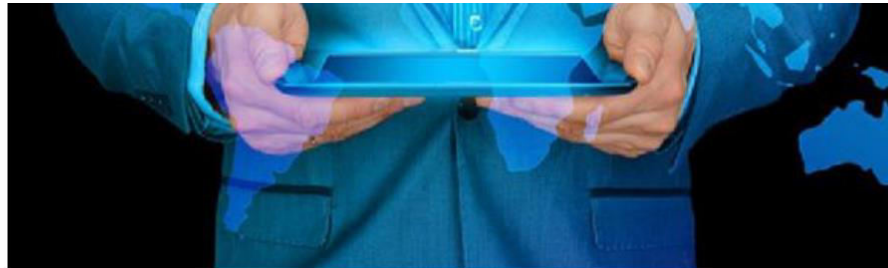
00:13 Четверо детей погибли в огне под Пермью

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.

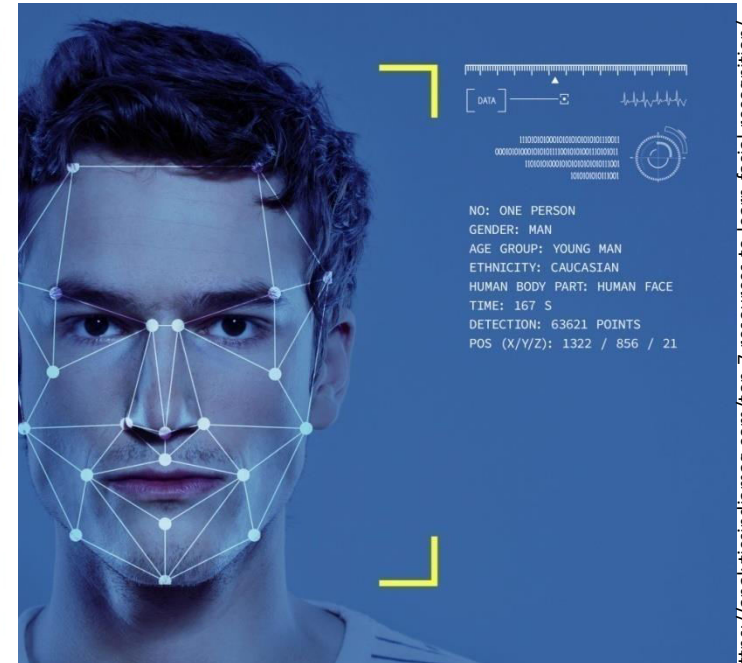
<https://cybersecurityventures.com/hackerpocalypse-cybercrime-report-2016/>

Who controls the producers?

Banned Chinese Security Cameras Are Almost Impossible to Remove



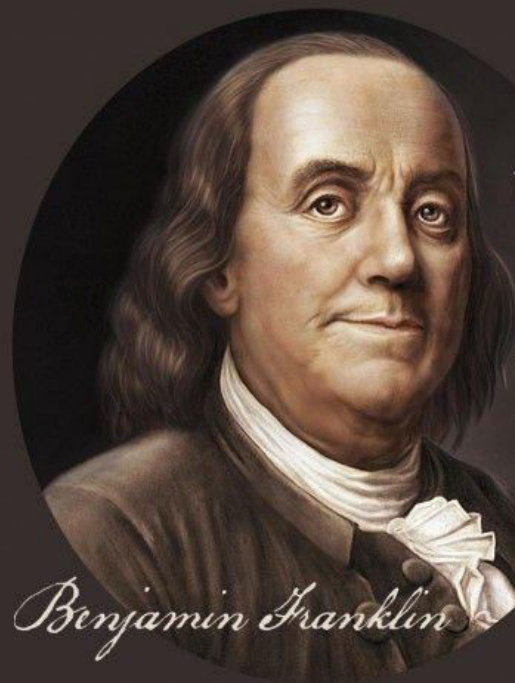
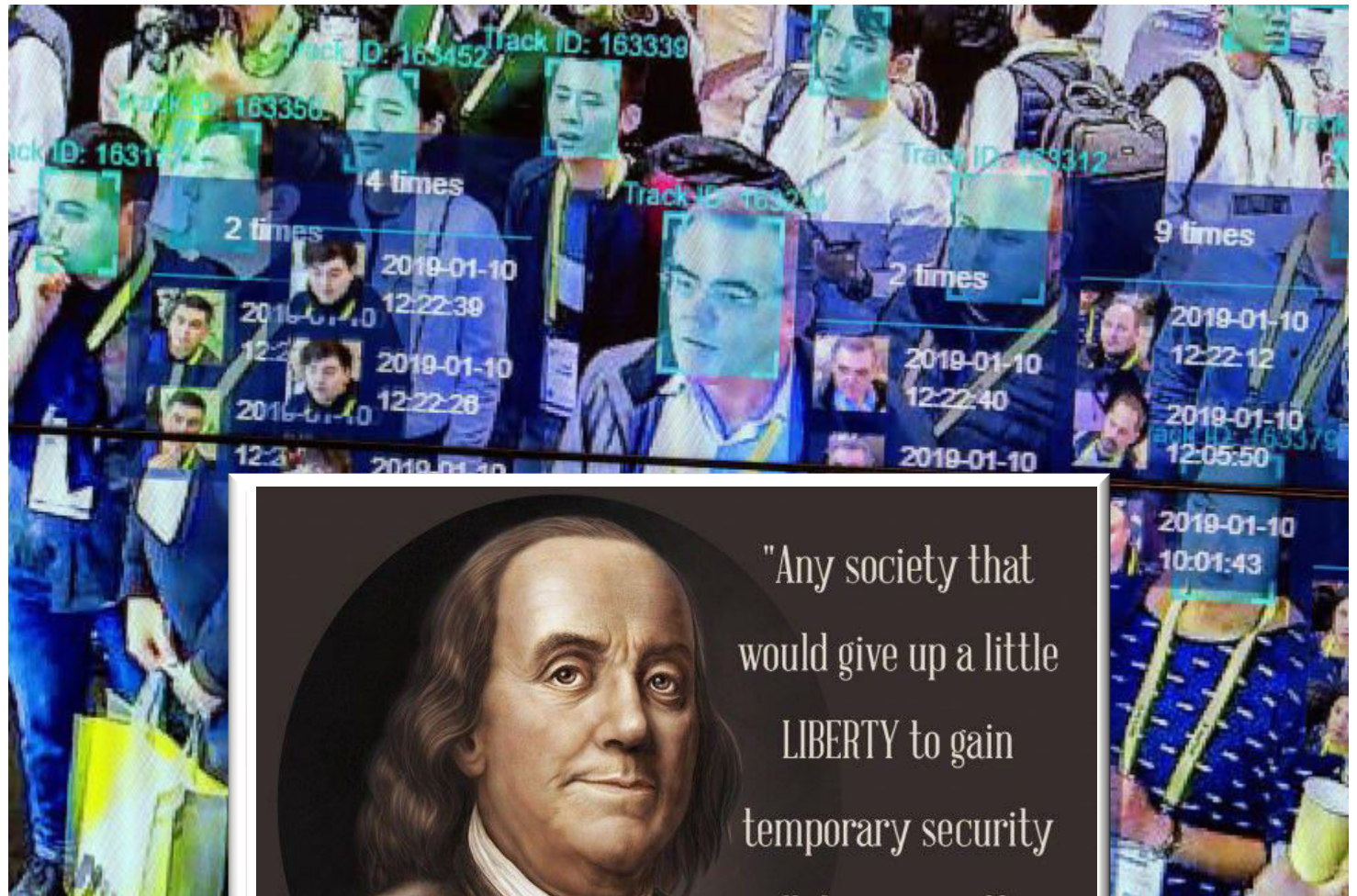
Source: Bloomberg



NO: ONE PERSON
GENDER: MAN
AGE GROUP: YOUNG MAN
ETHNICITY: CAUCASIAN
HUMAN BODY PART: HUMAN FACE
TIME: 167 S
DETECTION: 63621 POINTS
POS (X/Y/Z): 1322 / 856 / 21

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)**

Security and Technology vs Liberty



"Any society that
would give up a little
LIBERTY to gain
temporary security
will deserve neither
and will lose both."

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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