

# Evolução e Desafios Futuros do Ciberespaço

Arnaut Moreira

<https://www.dallasnews.com>

IUM 17 Out 2022

# Hackers da Bielorrússia ajudam a Ucrânia

## RAILWAY TECHNOLOGY

☰ All Sections | 🔍 | News Analysis ▾ Sectors ▾ Themes ▾ Insights ▾ Companies ▾ Events Reports

NEWS | March 1, 2022 | updated 23 Mar 2022 1:22pm

## Belarus hackers attack train systems to disrupt Russian troops

The aim of the attack was to buy more time for Ukrainians to resist Russia's assault.



<https://www.railway-technology.com/news/belarus-hackers-attack-train-systems/>

# Agenda

1. A Evolução do Ciberespaço
2. Visões e Actores
3. Estratégias de Poder
4. Desafios Futuros

# Agenda

- 1. A Evolução do Ciberespaço**
2. Visões e Actores
3. Estratégias de Poder
4. Desafios Futuros

# Agenda

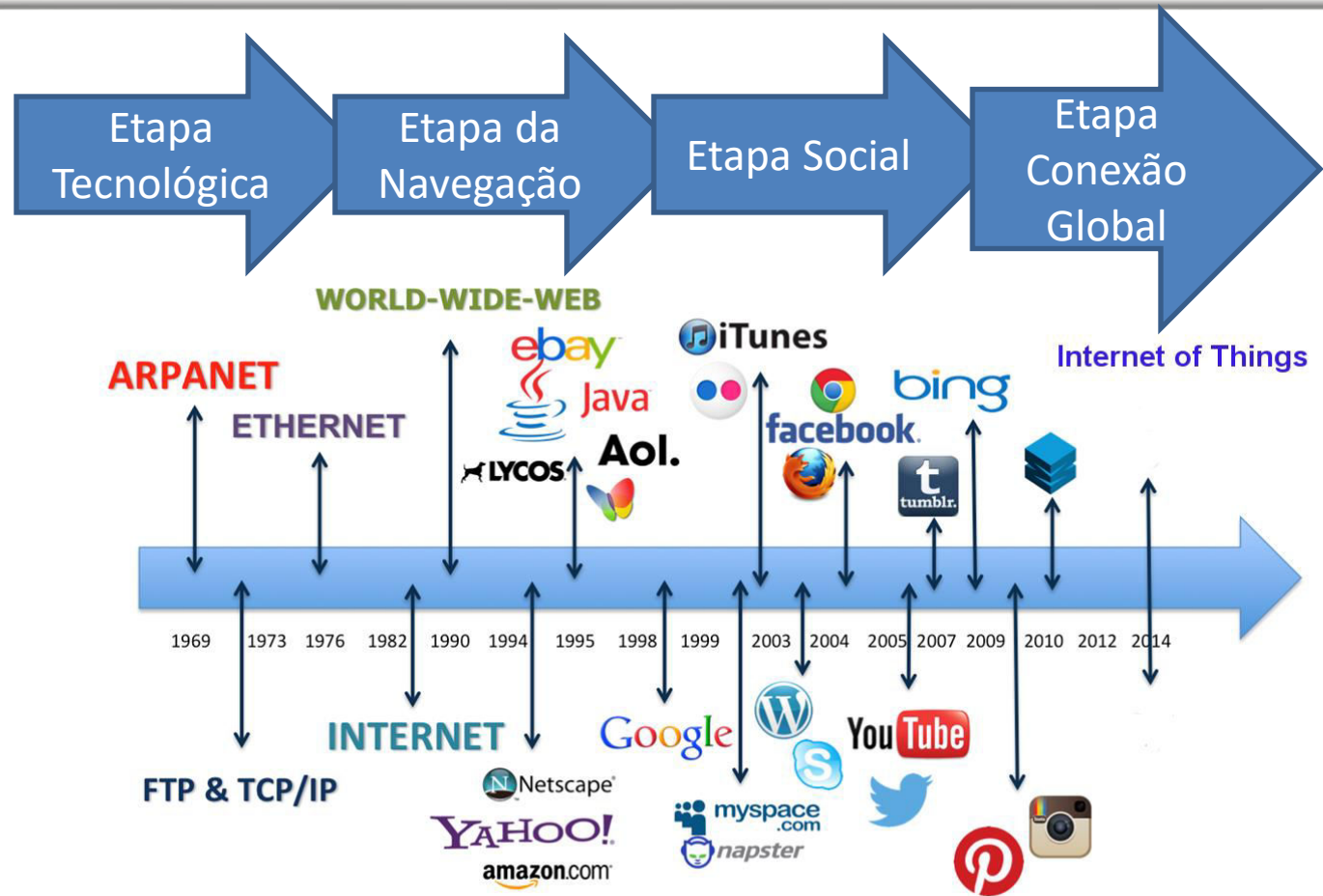
## **CIBERESPAÇO**

Conjunto de Actores e de Sistemas Físicos e Aplicacionais que permite a conexão em rede a uma escala global.





# A evolução da Internet em 4 etapas



# Um Planeta (quase) todo Digital

JAN  
2022

## ESSENTIAL DIGITAL HEADLINES

OVERVIEW OF THE ADOPTION AND USE OF CONNECTED DEVICES AND SERVICES



TOTAL  
POPULATION



we  
are  
social

**7.91**  
**BILLION**

URBANISATION

**57.0%**

UNIQUE MOBILE  
PHONE USERS



**5.31**  
**BILLION**

vs. POPULATION

**67.1%**

INTERNET  
USERS



**4.95**  
**BILLION**

vs. POPULATION

**62.5%**

ACTIVE SOCIAL  
MEDIA USERS



**4.62**  
**BILLION**

vs. POPULATION

**58.4%**

9

**SOURCES:** UNITED NATIONS; U.S. CENSUS BUREAU; GOVERNMENT BODIES; GSMA INTELLIGENCE; ITU; GWI; EUROSTAT; CNNIC; APIII; CIA WORLD FACTBOOK; COMPANY ADVERTISING RESOURCES AND EARNINGS REPORTS; OCDH; TECHRASA; KEPIOS ANALYSIS. **ADVISORY:** SOCIAL MEDIA USERS MAY **NOT** REPRESENT UNIQUE INDIVIDUALS. **COMPARABILITY:** SOURCE AND BASE CHANGES.

we  
are  
social

Hootsuite®

<https://datareportal.com/reports/digital-2022-global-overview-report>



# Mobile Phones lideram o acesso

JAN  
2021

## SHARE OF WEB TRAFFIC BY DEVICE

EACH DEVICE'S SHARE OF TOTAL WEB PAGES SERVED TO WEB BROWSERS

⚠ THE FIGURES ON THIS CHART ARE BASED ON TRAFFIC TO WEB BROWSERS ONLY, AND DO NOT INCLUDE DATA FOR OTHER CONNECTED ACTIVITIES (E.G. USE OF NATIVE MOBILE APPS)

MOBILE  
PHONES



**55.7%**

DEC 2020 vs. DEC 2019:

**+4.6%**

**+244 BPS**

LAPTOPS &  
DESKTOPS



**41.4%**

DEC 2020 vs. DEC 2019:

**-5.8%**

**-253 BPS**

TABLET  
COMPUTERS



**2.8%**

DEC 2020 vs. DEC 2019:

**+3.3%**

**+9 BPS**

OTHER  
DEVICES



**0.07%**

DEC 2020 vs. DEC 2019:

**[UNCHANGED]**

55

SOURCE: STATCOUNTER (ACCESSED JAN 2021). FIGURES REPRESENT EACH DEVICE'S SHARE OF WEB PAGES SERVED TO WEB BROWSERS ONLY. NOTES: FIGURES FOR DEVICE SHARE ARE FOR DECEMBER 2020. ANNUAL CHANGE FIGURES COMPARE MONTHLY SHARE VALUES FOR DECEMBER 2020 TO DECEMBER 2019. PERCENTAGE CHANGE VALUES REPRESENT RELATIVE CHANGE (E.G. AN INCREASE OF 2.0% FROM A STARTING VALUE OF 50% WOULD EQUAL 6.0%, NOT 70%). 'BPS' VALUES REPRESENT BASIS POINTS, AND INDICATE THE ABSOLUTE CHANGE IN SHARE VALUE.

we  
are  
social

Hootsuite

<https://www.slideshare.net/kepios/global-digital-statbites-001>

# A Revolução do 5 G



- 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.



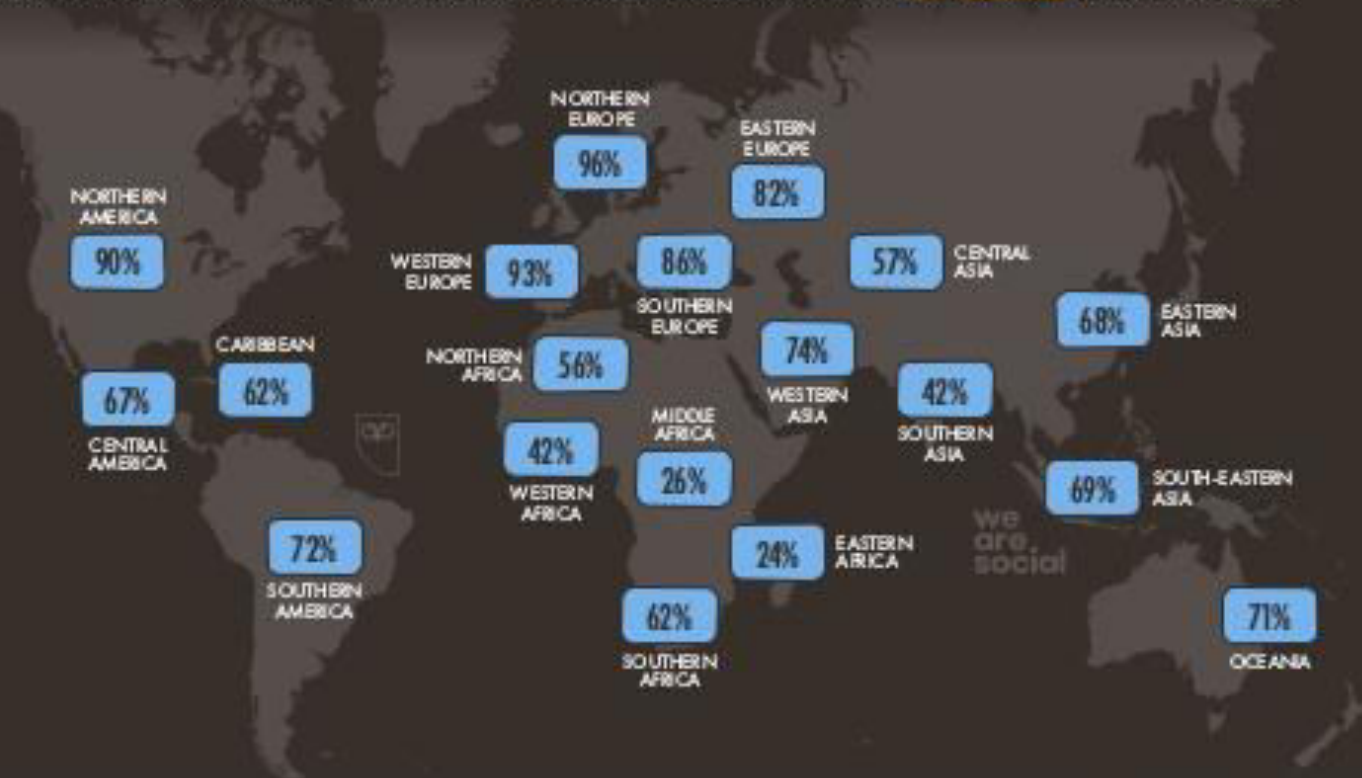
# Desigualdades no acesso à Internet

JAN  
2021

## INTERNET USERS vs. TOTAL POPULATION BY REGION

NUMBER OF INTERNET USERS IN EACH REGION COMPARED TO TOTAL POPULATION

⚠️ INTERNET USER NUMBERS NO LONGER INCLUDE DATA SOURCED FROM SOCIAL MEDIA PLATFORMS, SO VALUES ARE **NOT COMPARABLE** WITH PREVIOUS REPORTS



18

**SOURCES:** KPI IQS (JAN 2021) BASED ON EXTRAPOLATIONS OF DATA PUBLISHED BY: THE ILO, IDEAL GOVERNMENT BODIES, GWI, GSMA INTELLIGENCE, EUROSTAT, APRI, CHINIC, THE U.N.  
**ADVISORIES:** INTERNET USER NUMBERS NO LONGER INCLUDE DATA SOURCED FROM SOCIAL MEDIA PLATFORMS. FIGURES ARE **NOT COMPARABLE** WITH DATA PUBLISHED IN PREVIOUS REPORTS. **NOTES:** PERCENTAGES REPRESENT SHARE OF TOTAL POPULATION. REGION'S BASED ON THE UNITED NATIONS GEOSCHEME.

we  
are  
social

Hootsuite

# Agenda

1. A Evolução do Ciberespaço
- 2. Visões e Actores**
3. Estratégias de Poder
4. Desafios futuros



# A Visão Utópica do Ciberespaço

## **CIBERESPAÇO**

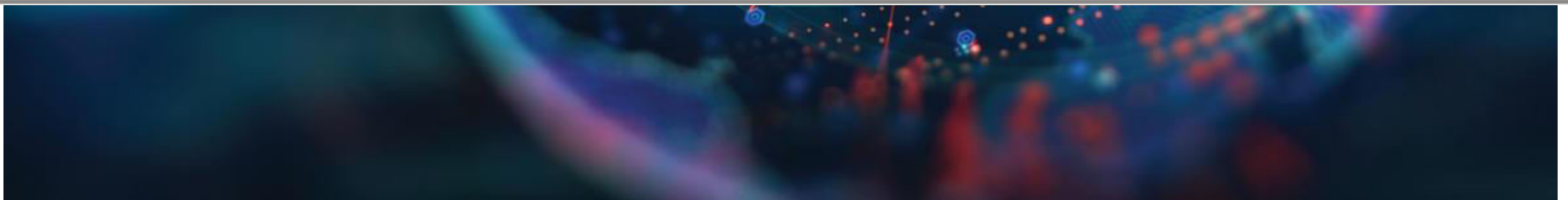
Espaço virtual de liberdade, onde o Internauta pode obter, trocar e ceder conhecimento

# A Visão Distópica do Ciberespaço




## **CIBERESPAÇO**

Espaço virtual de afirmação e confrontação de poderes políticos, económicos, sociais e militares e de ocultação de actividades ilícitas e de crime organizado.



# Actores do Ciberespaço

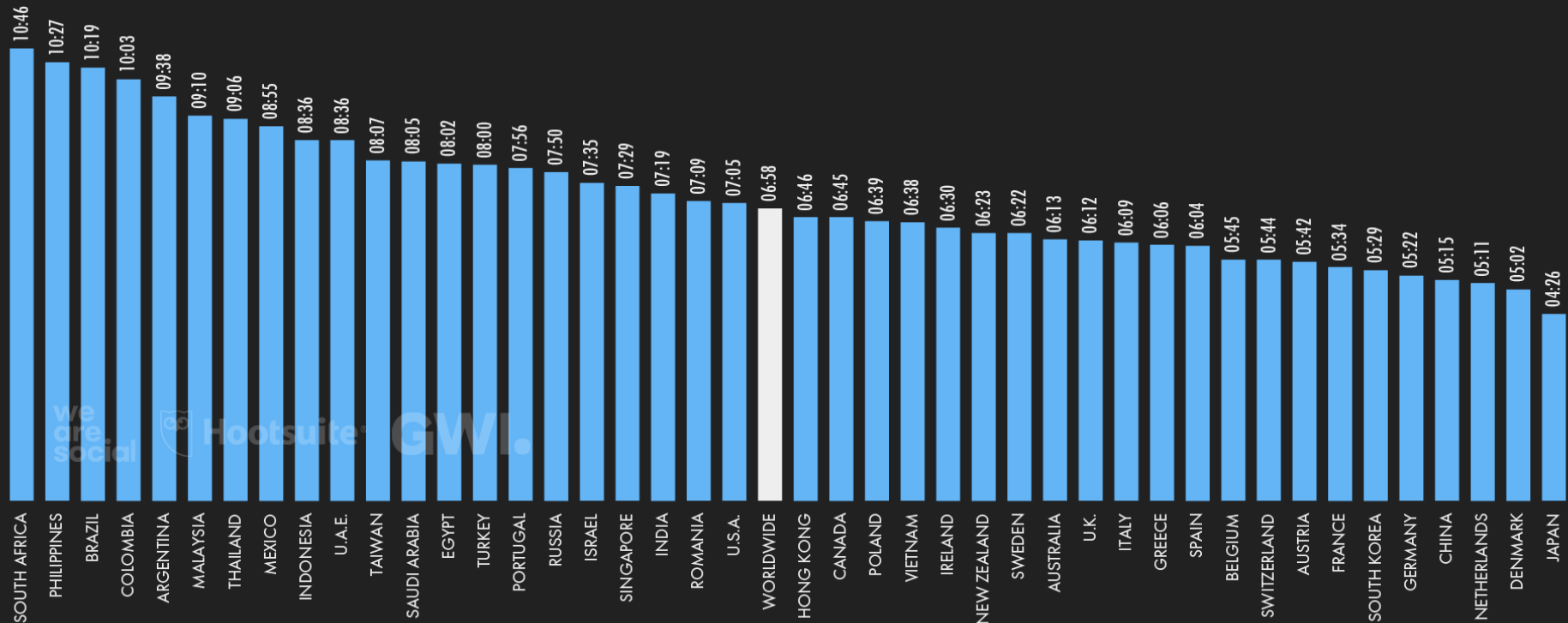
- 
- a. Os internautas
  - b. As empresas
  - c. As instituições
  - d. Os serviços de informações
  - e. As forças armadas
  - f. Os activismos
  - g. Os hackers
  - h. O crime organizado
  - i. As forças geoestratégicas

# Utilização Média por Dia : 6H 58 M

JAN  
2022

## DAILY TIME SPENT USING THE INTERNET

AVERAGE AMOUNT OF TIME (IN HOURS AND MINUTES) THAT INTERNET USERS AGED 16 TO 64 SPEND USING THE INTERNET EACH DAY ON ANY DEVICE





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# A INTERNET Não Pertence a Ninguém

## WHO RUNS THE INTERNET?

## NO ONE PERSON, COMPANY, ORGANIZATION OR GOVERNMENT RUNS THE INTERNET.

The Internet itself is a globally distributed computer network comprised of many voluntarily interconnected autonomous networks. Similarly, its governance is conducted by a decentralized and international multi-stakeholder network of interconnected autonomous groups drawing from civil society, the private sector, governments, the academic and research communities, and national and international organizations. They work cooperatively from their respective roles to create shared policies and standards that maintain the Internet's global interoperability for the public good.

### WHO IS INVOLVED:

#### IAB **A C P S R**

**INTERNET ARCHITECTURE BOARD**  
Oversees the technical and engineering development of the IETF and IRTF.  
[www.iab.org](http://www.iab.org)

#### ICANN **C O P V**

**INTERNET CORPORATION FOR ASSIGNED NAMES AND NUMBERS**  
Coordinates the Internet's systems of unique identifiers: IP addresses, Protocol-Parameter registries, top-level domain space (DNS root zone).  
[www.icann.org](http://www.icann.org)

#### IETF **C P S**

**INTERNET ENGINEERING TASK FORCE**  
Develops and promotes a wide range of Internet standards dealing in particular with standards of the Internet protocol suite. Their technical documents influence the way people design, use, and manage the Internet.  
[www.ietf.org](http://www.ietf.org)

#### IGF **A C P**

**INTERNET GOVERNANCE FORUM**  
A multi-stakeholder open forum for debate on issues related to internet governance.  
[www.intgovforum.org](http://www.intgovforum.org)

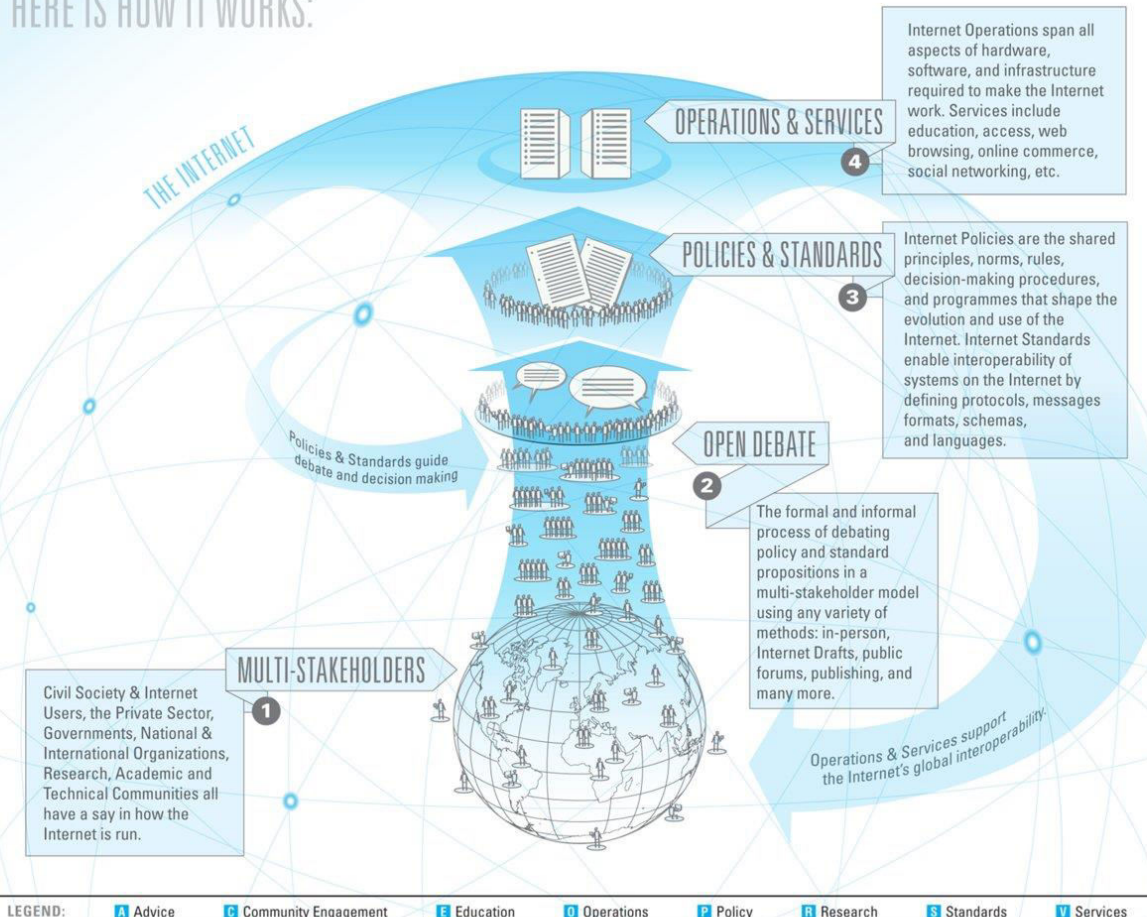
#### IRTF **R**

**INTERNET RESEARCH TASK FORCE**  
Promotes research of the evolution of the Internet by creating focused, long-term research groups working on topics related to Internet protocols, applications, architecture and technology.  
[www.irtf.org](http://www.irtf.org)

#### GOVERNMENTS AND INTER-GOVERNMENTAL ORGANIZATIONS **C P**

Develop laws, regulations and policies applicable to the Internet within their jurisdictions; participants in multilateral and multi-stakeholder regional and international fora on Internet Governance.

### HERE IS HOW IT WORKS:



LEGEND: **A** Advice **C** Community Engagement **E** Education **O** Operations **P** Policy **R** Research **S** Standards **V** Services

### WHO IS INVOLVED:

#### ISO 3166 MA **S**

**INTERNATIONAL ORGANIZATION FOR STANDARDIZATION, MAINTENANCE AGENCY**  
Defines names and postal codes of countries, dependent territories, special areas of geographic significance.  
[www.iso.org/iso/country\\_codes.htm](http://www.iso.org/iso/country_codes.htm)

#### ISOC **C E P V**

**INTERNET SOCIETY**  
Assure the open development, evolution and use of the Internet for the benefit of all people throughout the world. Currently ISOC has over 90 chapters in around 80 countries.  
[www.internetsociety.org](http://www.internetsociety.org)

#### RIRs **O P V**

**5 REGIONAL INTERNET REGISTRIES**  
Manage the allocation and registration of Internet number resources, such as IP addresses, within geographic regions of the world.

[www.afrinic.net](http://www.afrinic.net) Africa  
[www.apnic.net](http://www.apnic.net) Asia Pacific  
[www.arin.net](http://www.arin.net) Canada & United States  
[www.lacnic.net](http://www.lacnic.net) Latin America & Caribbean  
[www.ripe.net](http://www.ripe.net) Europe, the Middle East & parts of Central Asia

#### W3C **S**

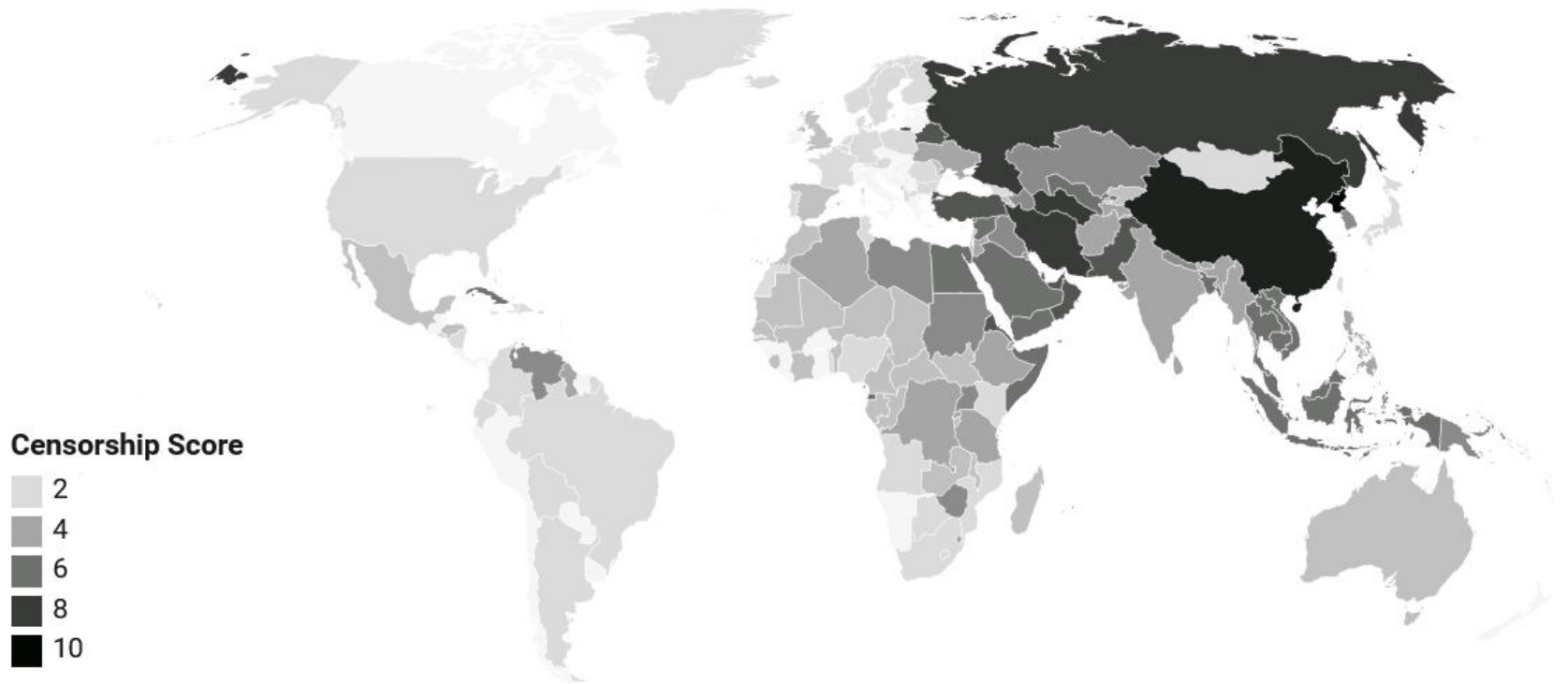
**WORLD WIDE WEB CONSORTIUM**  
Create standards for the world wide web that enable an Open Web Platform, for example, by focusing on issues of accessibility, internationalization, and mobile web solutions.  
[www.w3.org](http://www.w3.org)

#### INTERNET NETWORK OPERATORS' GROUPS **A O V**

Discuss and influence matters related to Internet operations and regulation within informal fora made up of Internet Service Providers (ISPs), Internet Exchange Points (IXPs) and others.

# A Censura no Ciberespaço

## Countries with the Worst Online Censorship in the World



Map: Comparitech • [Get the data](#) • Created with [Datawrapper](#)

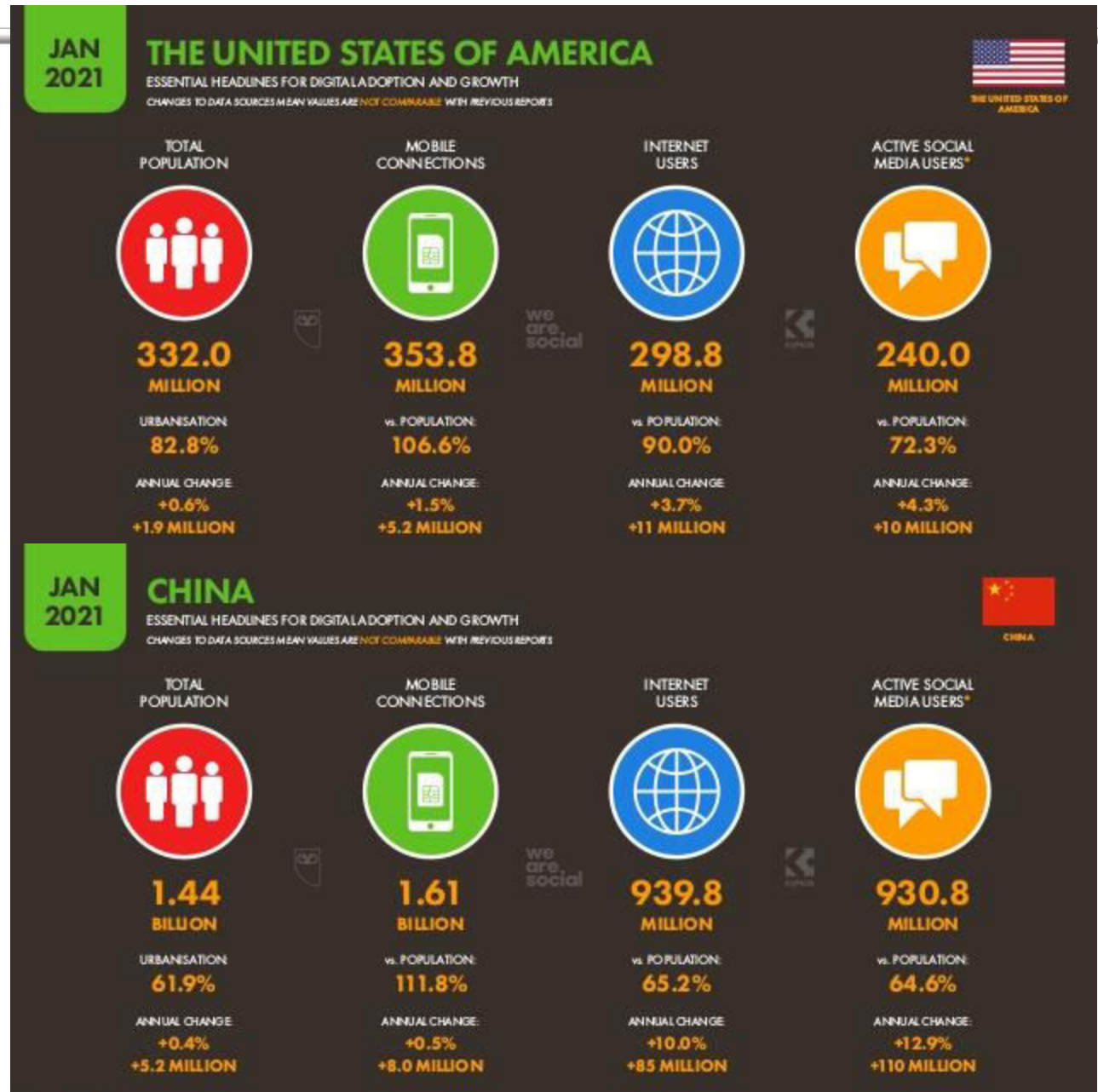
<https://www.comparitech.com/blog/vpn-privacy/internet-censorship-map/>



# USA vs CHINA na Internet



Arnaut Moreira





# Os EUA e o Ciberespaço

## The 100 largest companies in the world by market capitalization in 2020 (in billion U.S. dollars)

Search:

Records: 13

Ranking of the companies rank 1 to 100	Market capitalization in billion U.S. dollars
Saudi Arabian Oil Company (Saudi Aramco) (Saudi Arabia)	1,684.8
Microsoft (United States)	1,359
Apple (United States)	1,285.5
Amazon (United States)	1,233.4
Alphabet (United States)	919.3
Facebook (United States)	583.7
Alibaba (China)	545.4
Tencent Holdings (China)	509.7
Berkshire Hathaway (United States)	455.4
Johnson & Johnson (United States)	395.3
Visa (United States)	383.9
Walmart (United States)	344.4
Nestlé (Switzerland)	304.1

Showing entries 1 to 13 (100 entries in total)

[Previous](#) [Next](#)

### DOWNLOAD



### Source

[→ Show sources informat](#)

[→ Show publisher inform](#)

### Release date

May 2020

### Region

Worldwide

### Survey time period

April 30, 2020

### Supplementary notes

Values are the closing price outstanding on April 30, 2020

# CHINA: The Great Firewall

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

**Censura de Conteúdos**

**Bloqueio selectivo de Websites**

**Retarda tráfico internacional**

# GLOBAL CHINA vs HONG KONG CHINA

JAN  
2021

## CHINA

ESSENTIAL HEADLINES FOR DIGITAL ADOPTION AND GROWTH  
CHANGES TO DATA SOURCES MEAN VALUES ARE **NOT COMPARABLE** WITH PREVIOUS REPORTS



TOTAL  
POPULATION



**1.44**  
BILLION

URBANISATION  
**61.9%**

ANNUAL CHANGE  
**+0.4%**  
**+5.2 MILLION**

MOBILE  
CONNECTIONS



**1.61**  
BILLION

vs. POPULATION:  
**111.8%**

ANNUAL CHANGE:  
**+0.5%**  
**+8.0 MILLION**

INTERNET  
USERS



**939.8**  
MILLION

vs. POPULATION:  
**65.2%**

ANNUAL CHANGE  
**+10.0%**  
**+85 MILLION**

ACTIVE SOCIAL  
MEDIA USERS\*



**930.8**  
MILLION

vs. POPULATION:  
**64.6%**

ANNUAL CHANGE:  
**+12.9%**  
**+110 MILLION**

JAN  
2021

## HONG KONG

ESSENTIAL HEADLINES FOR DIGITAL ADOPTION AND GROWTH  
CHANGES TO DATA SOURCES MEAN VALUES ARE **NOT COMPARABLE** WITH PREVIOUS REPORTS



TOTAL  
POPULATION



**7.52**  
MILLION

URBANISATION  
**100.0%**

ANNUAL CHANGE  
**+0.8%**  
**+58 THOUSAND**

MOBILE  
CONNECTIONS



**13.80**  
MILLION

vs. POPULATION:  
**183.4%**

ANNUAL CHANGE:  
**-2.2%**  
**-306 THOUSAND**

INTERNET  
USERS



**6.92**  
MILLION

vs. POPULATION:  
**92.0%**

ANNUAL CHANGE  
**+1.9%**  
**+128 THOUSAND**

ACTIVE SOCIAL  
MEDIA USERS\*



**6.44**  
MILLION

vs. POPULATION:  
**85.6%**

ANNUAL CHANGE:  
**+1.7%**  
**+110 THOUSAND**



# China: Perfis financeiros, sociais e morais

## Perfis Financeiros

Este sistema também existe no sistema bancário ocidental.

A pessoa é de confiança para receber um crédito?

Na China existe uma Lista Negra online de pessoas não confiáveis

## Sistemas de Crédito Social (consoante as cidades)

Atravessa a rua fora da passadeira?

Não vai visitar os seus pais idosos?

Ouve música muito alto?

Não recicla adequadamente ?

Castigos:

Humilhação pública em outdoors electrónicos

Não aceitação de reservas em restaurantes e hotéis

Proibição de andar de avião ou em comboios rápidos



# Rússia: RUNET, uma Internet nacional



23\_12\_2019

## Новости

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

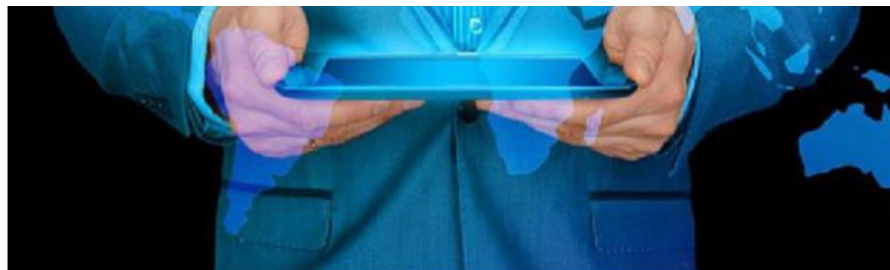
00:13 Четверо детей погибли в огне под Пермью

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/>

# A Formatação no Ciberespaço

**The Moscow Times**  
INDEPENDENT NEWS FROM RUSSIA

≡ NEWS OPINION BUSINESS MEANWHILE ARTS AND LIFE PODCASTS VIDEOS IN-DEPTH

## Russia Plans Its Own Version of Wikipedia by 2023

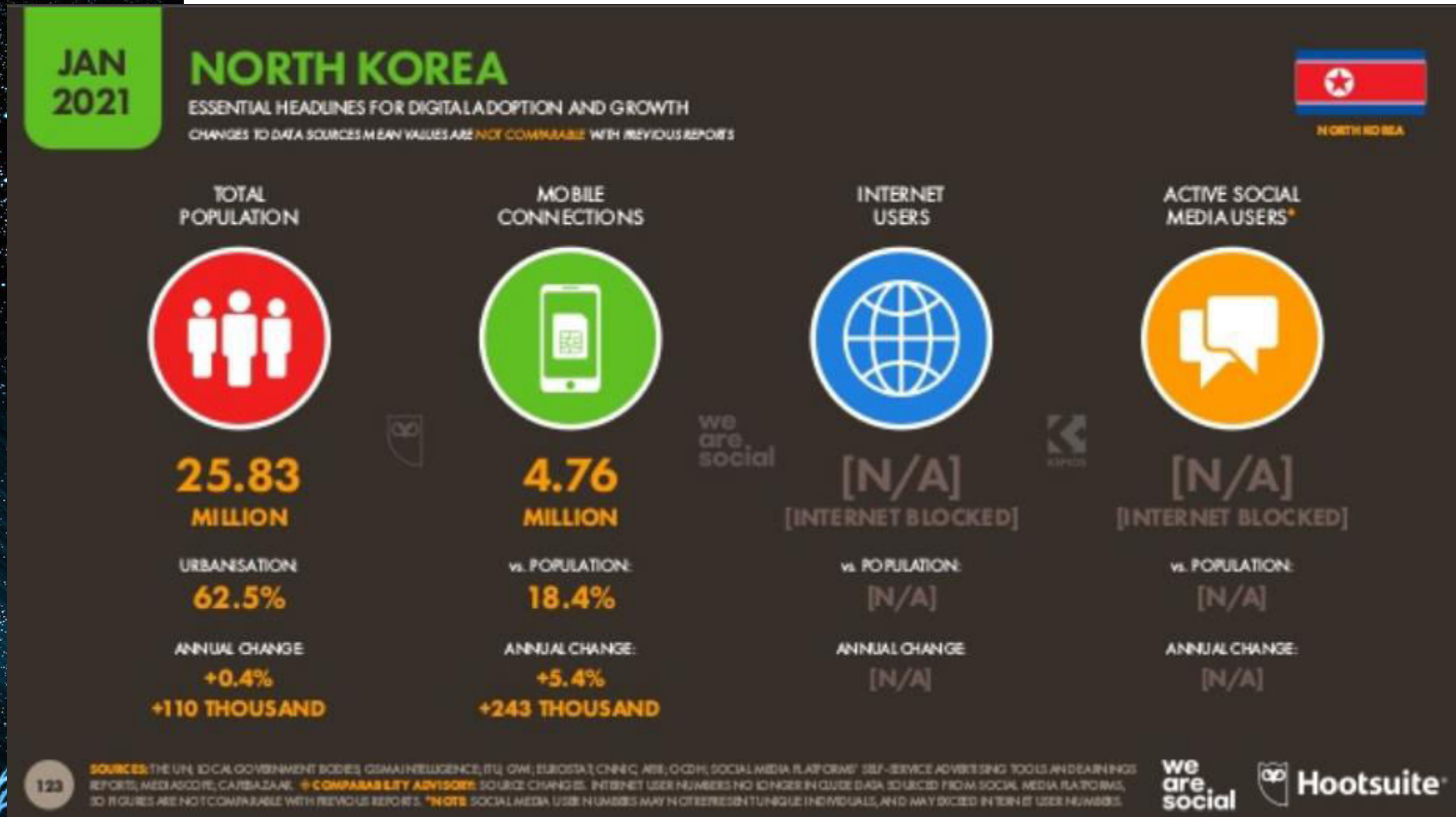
The project aims to attract three times as much traffic as Wikipedia.org.

Oct. 9, 2019



under 3 million Russian users visited Wikipedia.org every day in July 2019.

# O Ciberespaço na Coreia do Norte



<https://www.slideshare.net/DataReportal/digital-2021-local-country-headlines-report-january-2021-v03>



# Actores não-estatais

## IDF: Hamas hacked soldiers' phones by posing as pretty girls

In 'catfishing' attack, dozens of servicemen duped by fake accounts as terrorist group tries to extract intel from social media, smartphones

BY JUDAH ARI GROSS | January 11, 2017, 5:55 pm |

Tweet



2

Email

THE TIMES OF ISRAEL  
11Jan2017



**A Forças de Defesa de Israel revelaram que o HAMAS criou falsos perfis nas Redes Sociais, para interagir com soldados israelitas e obter informação sensível.**

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# Revoluções sociais à vista ?

JAN  
2019

## INTERNET GROWTH RANKINGS: RELATIVE GROWTH

BASED ON THE YEAR-ON-YEAR PERCENTAGE CHANGE IN INTERNET USERS IN COUNTRIES / TERRITORIES WITH POPULATIONS OVER 50,000

#	GREATEST RELATIVE GROWTH	▲%	▲ USERS
01	WESTERN SAHARA	+364%	+102,000
02	DJIBOUTI	+203%	+364,870
03	TANZANIA	+173%	+14,560,898
04	NIGER	+146%	+1,378,981
05	AFGHANISTAN	+142%	+5,694,586
06	CÔTE D'IVOIRE	+69%	+4,529,978
07	UKRAINE	+60%	+15,325,054
08	CAMBODIA	+56%	+4,500,000
09	RWANDA	+50%	+1,875,322
10	ZAMBIA	+40%	+2,056,489

#	GREATEST RELATIVE GROWTH	▲%	▲ USERS
11	MADAGASCAR	+37%	+708,390
12	TIMOR-LESTE	+37%	+150,000
13	BOLIVIA	+36%	+2,317,749
14	COMOROS	+31%	+40,000
15	IRAN	+29%	+16,241,877
16	CUBA	+27%	+1,270,796
17	ITALY	+27%	+11,490,731
18=	GUINEA-BISSAU	+25%	+30,000
18=	NORTH KOREA	+25%	+4,000
18=	SOMALIA	+25%	+300,000

37

SOURCES: INTERNETWORLDSTATS; ITU; WORLD BANK; CIA WORLD FACTBOOK; EUROSTAT; LOCAL GOVERNMENT BODIES AND REGULATORY AUTHORITIES; MIDEASTMEDIA.ORG; REPORTS IN REPUTABLE MEDIA; SOCIAL MEDIA PLATFORM USER NUMBERS. NOTE: GROWTH FIGURES BASED ON DATA IN 'WE ARE SOCIAL & HOOTSUITE'S 'DIGITAL 2018' REPORTS.

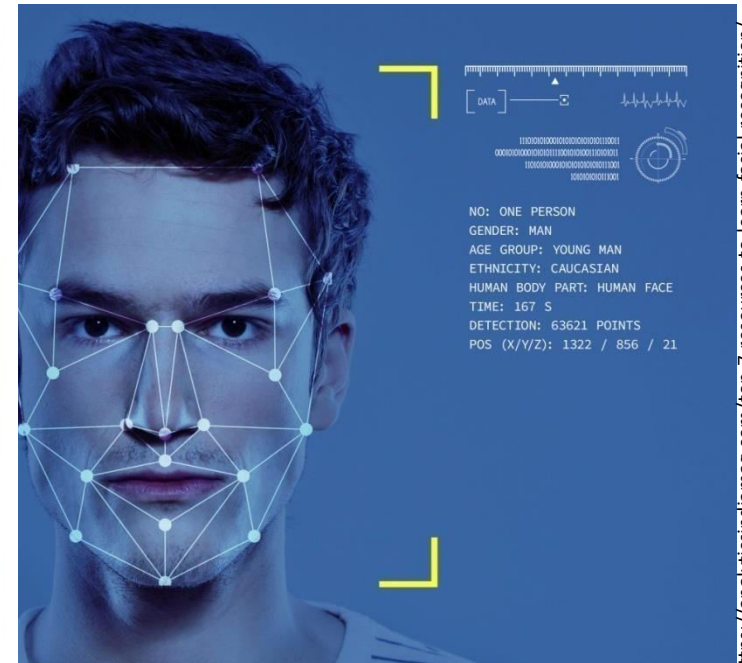


# Quem controla o fabricante?

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)**



# Segurança e Tecnologia vs. Liberdade



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

**« Todo aquele que estiver disposto a abdicar da sua Liberdade em nome de Segurança, não merece nem terá nenhuma das duas »**

Benjamin Franklin

# Esta Conferência já está na Web

1º Passo – Pesquisar no Google “Blog Arnaut”



Blog Arnaut

2º Passo – Entrar em “Geopolítica”

## Quinta dos Arnaut

*Uma quinta sobre a montanha*

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

3º Passo – Procurar nas  
“Conferências”

## **Conferências**

2019\_04\_10 Universidade Nova: Uma Geopolítica Africana

Geopolítica de África v5

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



# Evolução e Desafios Futuros do Ciberespaço

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