

Evolução e Desafios Futuros do Ciberespaço

Arnaut Moreira

Agenda

1. O Ciberespaço como dimensão de Poder
2. O Poder dos Actores
3. Estratégias de Poder no Ciberespaço
4. Desafios futuros

Agenda

- 1. O Ciberespaço como dimensão de Poder**
2. O Poder dos Actores
3. Estratégias de Poder no Ciberespaço
4. Desafios futuros

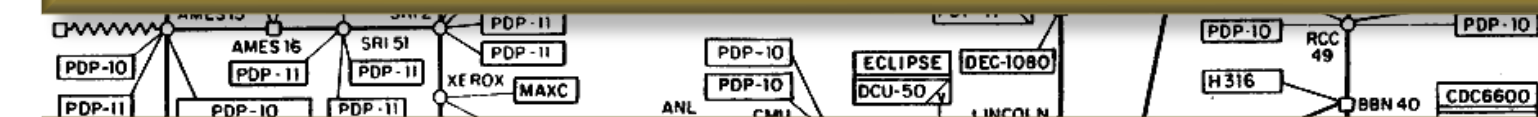
Agenda

CIBERESPAÇO

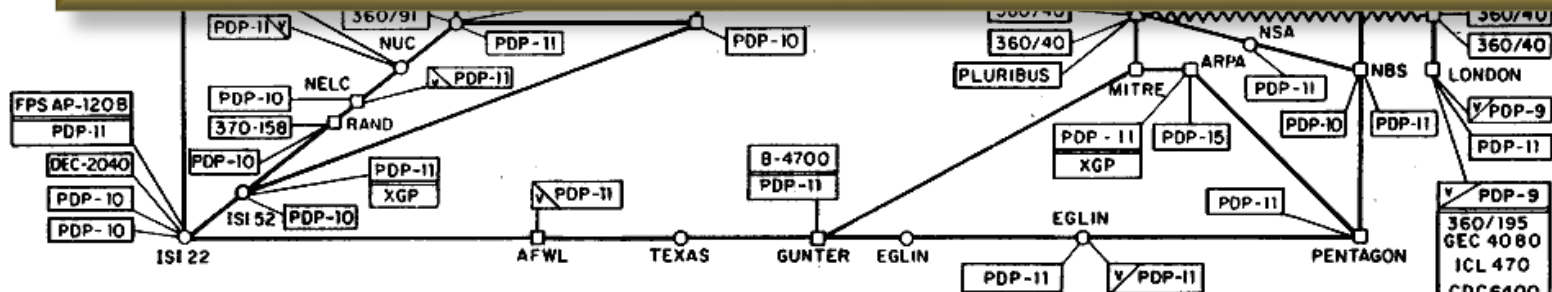
Conjunto de Actores e de Sistemas Físicos e Aplicacionais que permite a conexão em rede a uma escala global.

Evolução da ARPANET

1969 – A ARPA (Advanced Research and Projects Agency) cria a ARPANET para fins militares



Objectivo: Ligar bases militares a centros de investigação através de uma rede com múltiplas conexões e sem um centro de controlo definido. Estamos na Guerra Fria



Anos 80 – A ARPA dá origem à MILNET (para fins militares) e à INTERNET (para finalidades civis)

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

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

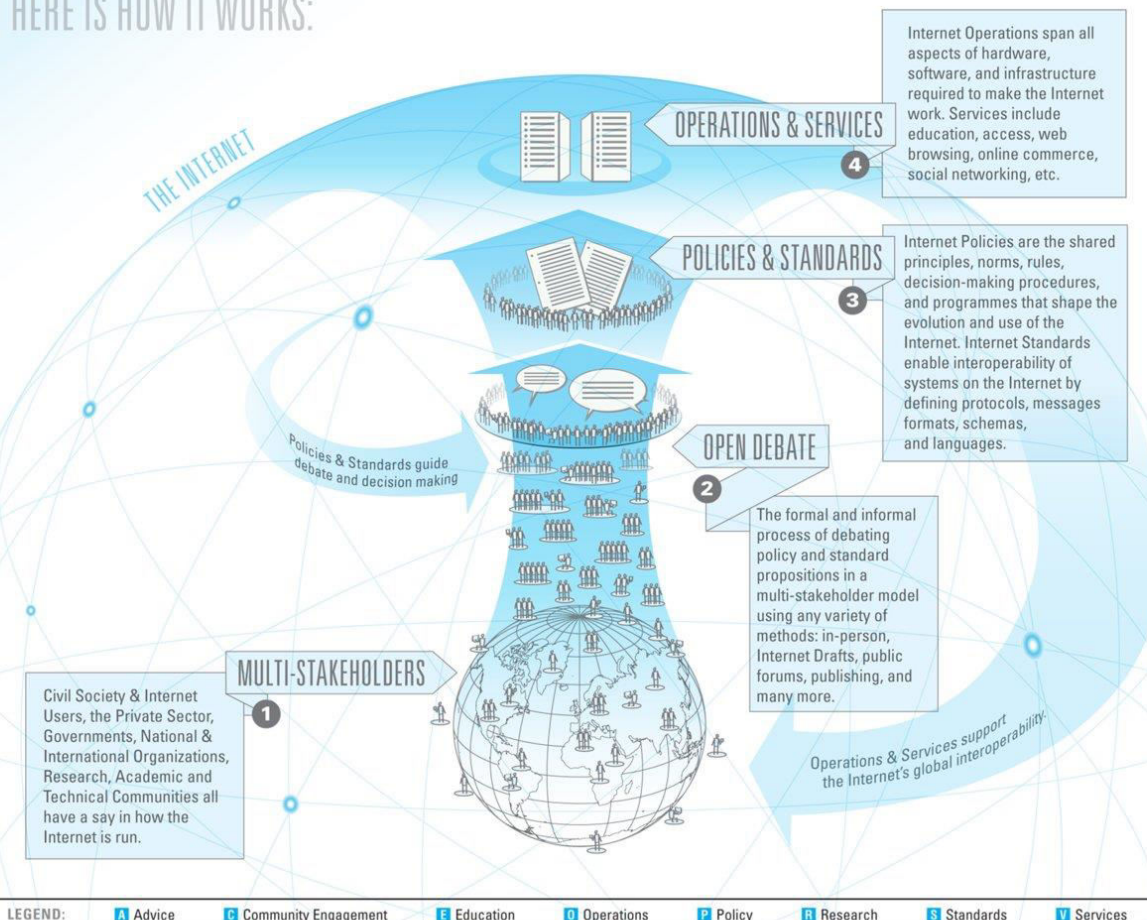
IETF **C P S**
INTERNET ENGINEERING TASK FORCE
Develops and promotes a wide range of Internet standards dealing in particular with standards of the Internet protocol suite. Their technical documents influence the way people design, use, and manage the Internet.
www.ietf.org

IGF **A C P**
INTERNET GOVERNANCE FORUM
A multi-stakeholder open forum for debate on issues related to internet governance.
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

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:



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

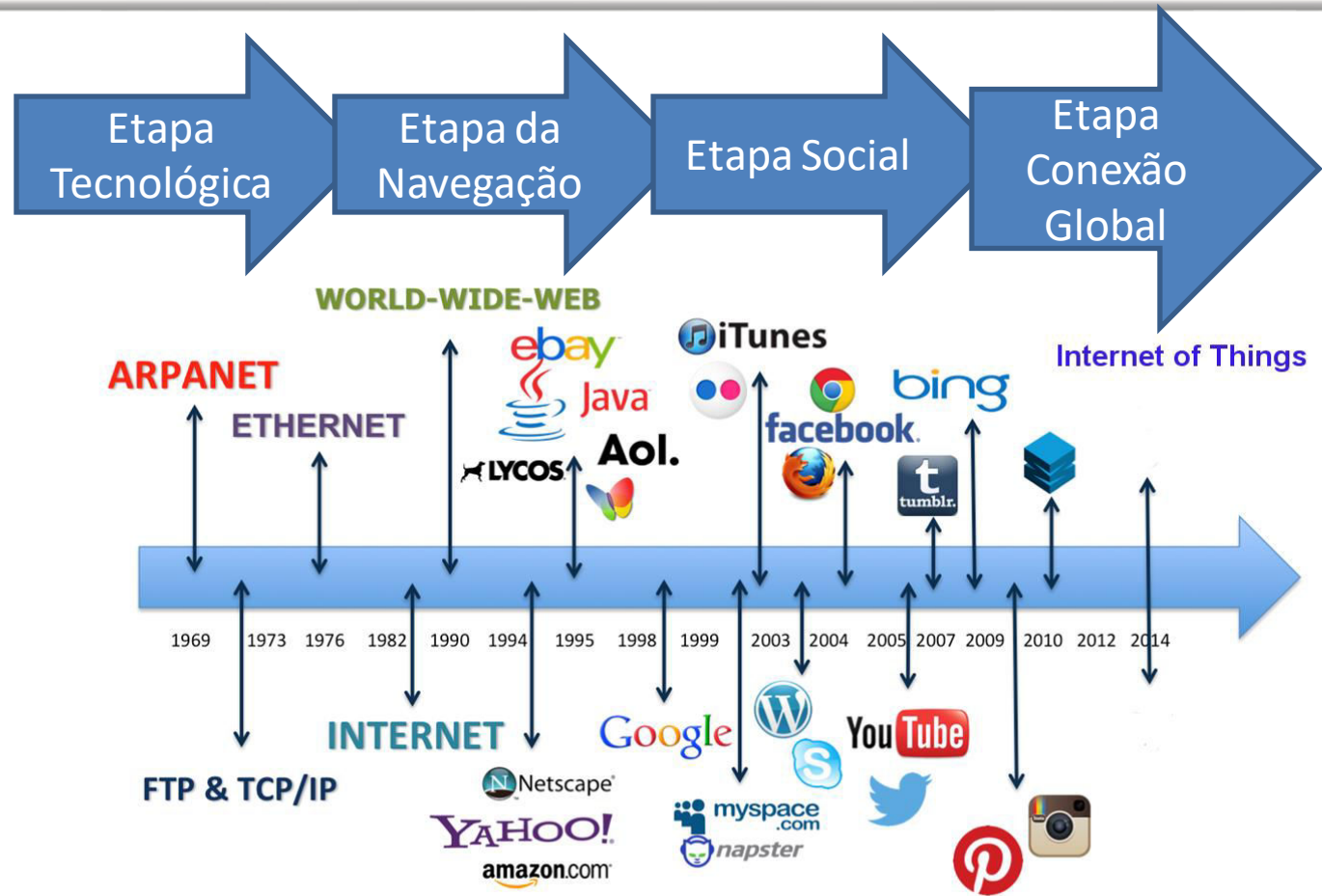
ISOC **C E P V**
INTERNET SOCIETY
Assure the open development, evolution and use of the Internet for the benefit of all people throughout the world. Currently ISOC has over 90 chapters in around 80 countries.
www.internetsociety.org

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 Africa
www.apnic.net Asia Pacific
www.arin.net Canada & United States
www.lacnic.net Latin America & Caribbean
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

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 evolução da Internet em 4 etapas



Um Planeta (quase) todo Digital

JAN
2021

DIGITAL AROUND THE WORLD

ESSENTIAL HEADLINES FOR MOBILE, INTERNET, AND SOCIAL MEDIA USE

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

TOTAL
POPULATION



7.83
BILLION

URBANISATION:

56.4%

UNIQUE MOBILE
PHONE USERS



5.22
BILLION

vs. POPULATION:

66.6%

INTERNET
USERS*



4.66
BILLION

vs. POPULATION:

59.5%

ACTIVE SOCIAL
MEDIA USERS*



4.20
BILLION

vs. POPULATION:

53.6%

16

SOURCES: THE U.N.; LOCAL GOVERNMENT BODIES; GSMA INTELLIGENCE; ITU; GWI; EUROSTAT; CNNIC; APJII; SOCIAL MEDIA PLATFORMS' SELF-SERVICE ADVERTISING TOOLS; COMPANY EARNINGS REPORTS; MEDIASCOPE. ***ADVISORIES:** INTERNET USER NUMBERS NO LONGER INCLUDE DATA SOURCED FROM SOCIAL MEDIA PLATFORMS, SO VALUES ARE **NOT COMPARABLE** TO DATA PUBLISHED IN PREVIOUS REPORTS. SOCIAL MEDIA USER NUMBERS MAY NOT REPRESENT UNIQUE INDIVIDUALS. **♦ COMPARABILITY ADVISORY:** SOURCE AND BASE CHANGES.

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

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 50%, NOT 70%). "BPS" VALUES REPRESENT BASIS POINTS, AND INDICATE THE ABSOLUTE CHANGE IN SHARE VALUE.

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

A era das vulnerabilidades: Ataques Cibernéticos

2007

Serviços Governamentais da Estónia são bloqueados por uma ataque DDoS quando decidem retirar memorial soviético

2010

Malware Stuxnet ataca centrifugadoras do Irão
(Um ataque digital que tem efeitos destrutivos físicos)

2014

Sony Pictures Entertainment atacada (Coreia N?)
(Um ataque digital sobre o mundo empresarial)

2014

Nato confirma que um ciberataque permite invocar Artº 5
(O Ciberespaço passa a ser um domínio operacional)

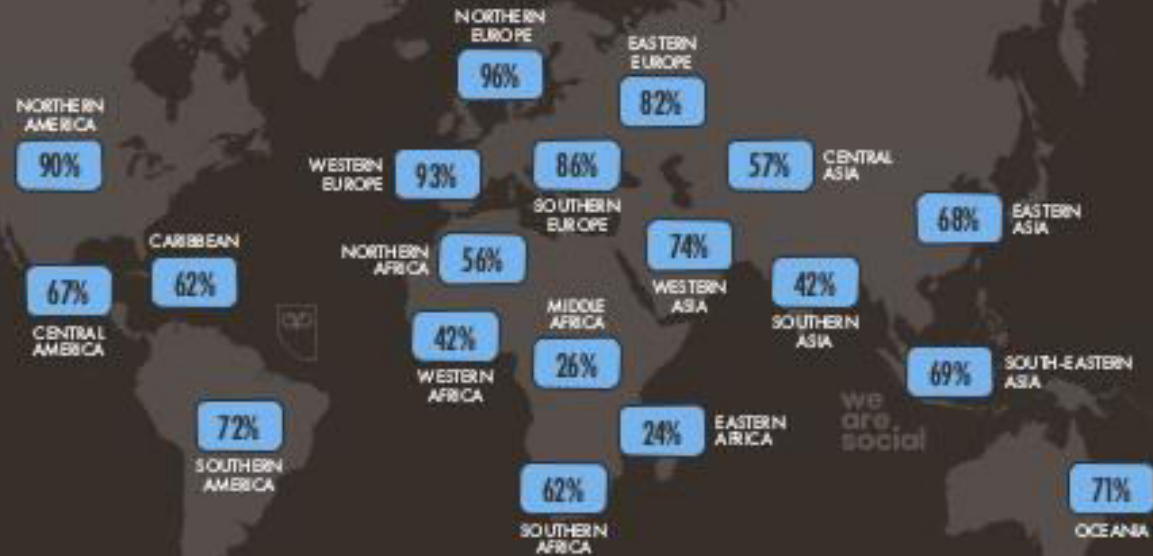
Desigualdades no acesso à Internet

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

SOURCE: KEYOS (JAN 2021) BASED ON EXTRAPOLATIONS OF DATA PUBLISHED BY: THE ILO, LOCAL GOVERNMENT BODIES, OMC, GSMA INTELLIGENCE, EUROSTAT, APJL, OMNIC, 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.

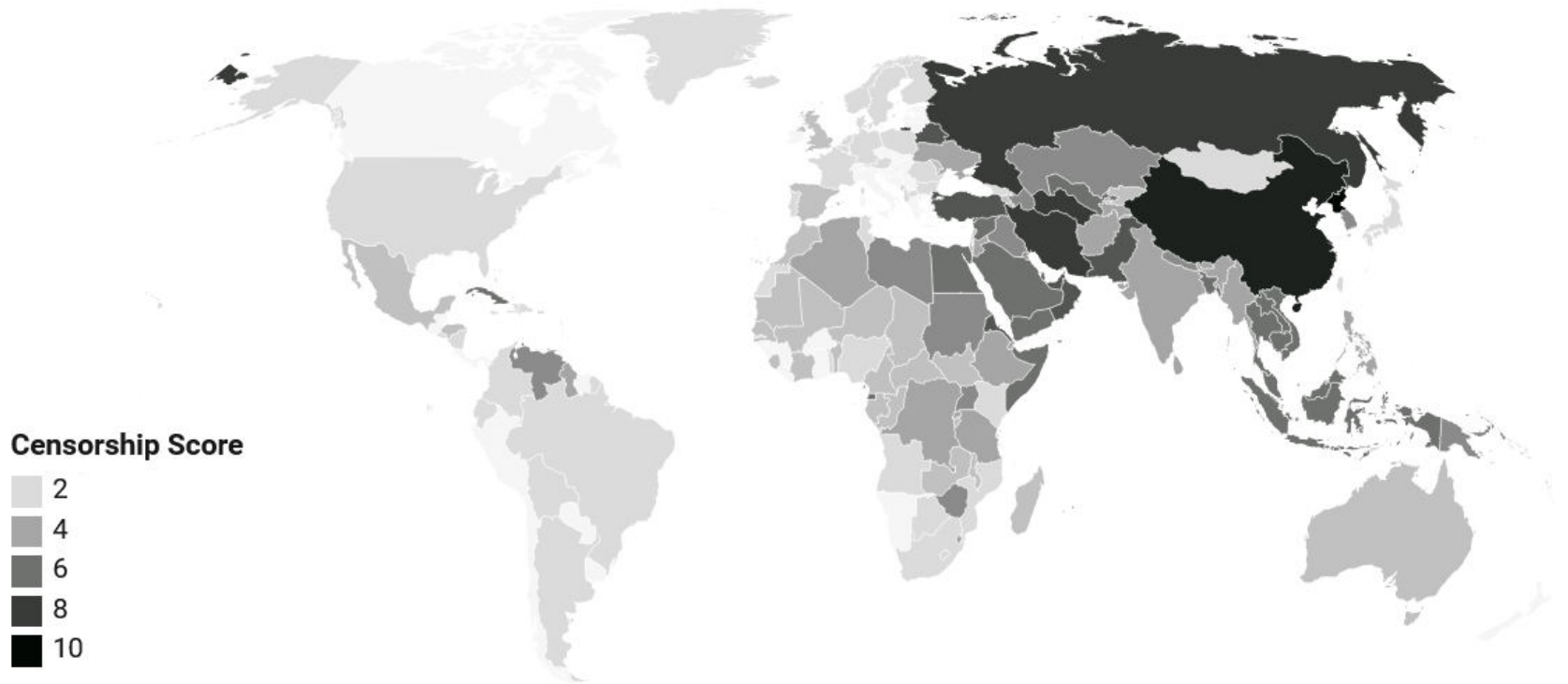
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are
social



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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/>

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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.



Os internautas no centro do Furacão



A paixão pelo Ciberespaço tem todas as características de um vício

<http://qz.com/553044/india-may-soon-have-more-internet-users-than-the-us/>

Constitui-se portanto como uma vulnerabilidade que pode ser explorada por outros Actores

Aumenta a nossa dependência



**ON AVERAGE, INTERNET USERS NOW SPEND
MORE THAN 48 HOURS PER WEEK ONLINE**


25

ESKIMON • SOURCE: GWI (Q3 2020)

KEPIOS

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

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

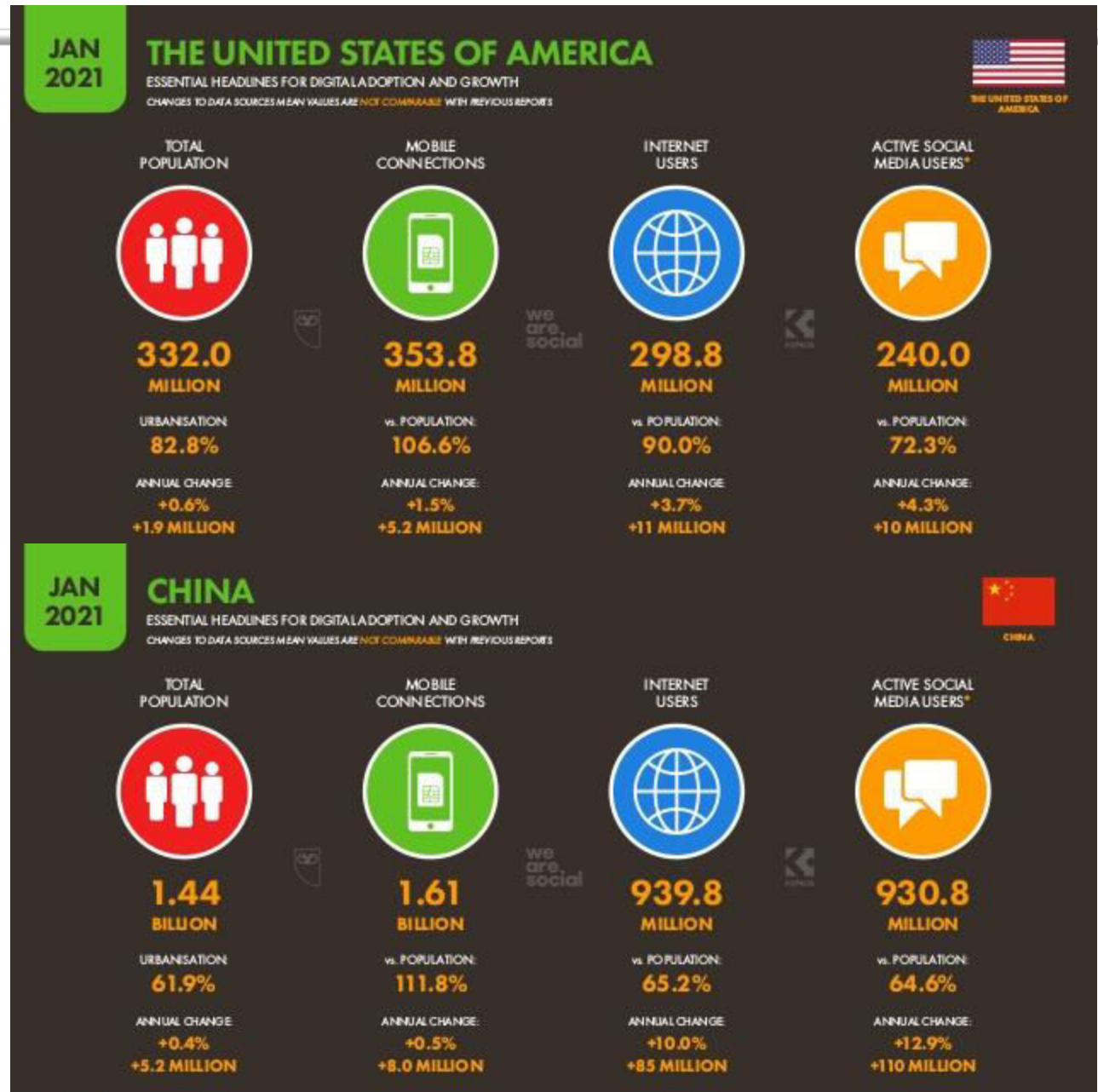
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USA vs CHINA na Internet



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: <input type="text"/>	Records: 13	★	DOWNLOAD
		🔔	PDF XLS
		⚙️	
		🔗	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 pri outstanding on April 30, 2

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](#)

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Os EUA e o Ciberespaço

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.

Os EUA e o Ciberespaço: Retaliações Diplomáticas

Em Julho 2016, WikiLeaks divulgou 20 000 emails obtidos da rede do DNC

**1Jan2017:
35 Russian diplomats
expelled by Obama over
hacking leave US**



<http://www.bbc.com/news/world-us-canada-38484735>

**Primeira vez que questões do Ciberespaço merecem uma
resposta diplomática desta gravidade**

US CYBER COMMAND



US military steps up cyberwarfare effort

March 12, 2019 10:44am GMT

The U.S. military is shifting the focus of its cyberwarfare forces, U.S. Air Force

Email

Twitter

Facebook

LinkedIn

Print

47

183

The U.S. military has the capability, the willingness and, perhaps for the first time, the official permission to preemptively engage in active cyberwarfare against foreign targets. The first known action happened as the 2018 midterm elections approached: [U.S. Cyber Command](#), the part of the military that oversees cyber operations, [waged a covert campaign](#) to deter [Russian interference](#) in the democratic process.

Authors



Benjamin Jensen

Associate Professor of International Relations, Marine Corps University; Scholar-in-Residence, American University School of International Service



Russell Martineau

<http://theconversation.com/us-military-steps-up-cyberwarfare-effort-113100>

US Cyber Command foi criado em Fort Meade no Maryland em 2009. Em 4 de Maio de 2018 passou a ser um dos 10 Comandos Unificados de Combate

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

USA vs CHINA

Baidu vs. Google: What's the Difference?



By SHOBHIT SETH | Updated Jun 25, 2019

Baidu vs. Google: An Overview

As Google ([GOOGL](#)) maintains its stronghold in the global internet search arena, Baidu, Inc., ([BIDU](#)) has the upper hand in China, with [74.6 percent of the nation's online search queries](#), as of February 2019. Google China, a subsidiary of Google, ranked a distant fifth in China's online search market, with a 2.03 percent share.

Google China's search engine was launched in 2006 and abruptly pulled from mainland China in 2010 amid a major hack of the company and disputes over censorship of search results.

<https://www.technologyreview.com/2018/12/19/138307/how-google-took-on-china-and-lost/>

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



CHINA

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



HONG KONG

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: Desenvolver uma Internet nacional



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.

<https://www.pravda.ru/news/politics/1461663-runet/>

Rússia: RUNET, uma Internet nacional



23_12_2019

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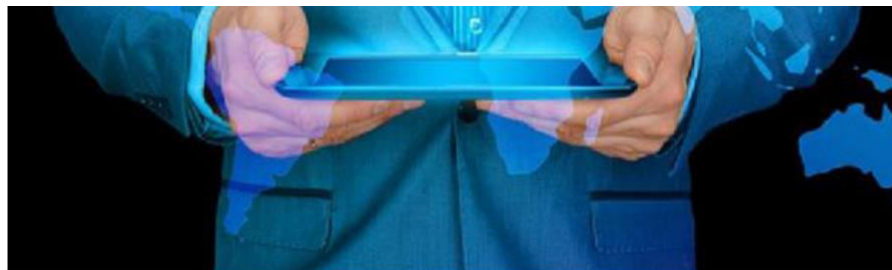
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"It turned out that, in general, both the authorities and telecom operators are ready to effectively respond to possible risks and threats and ensure the functioning of the Internet and the unified telecommunication network in Russia," Sokolov says. 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

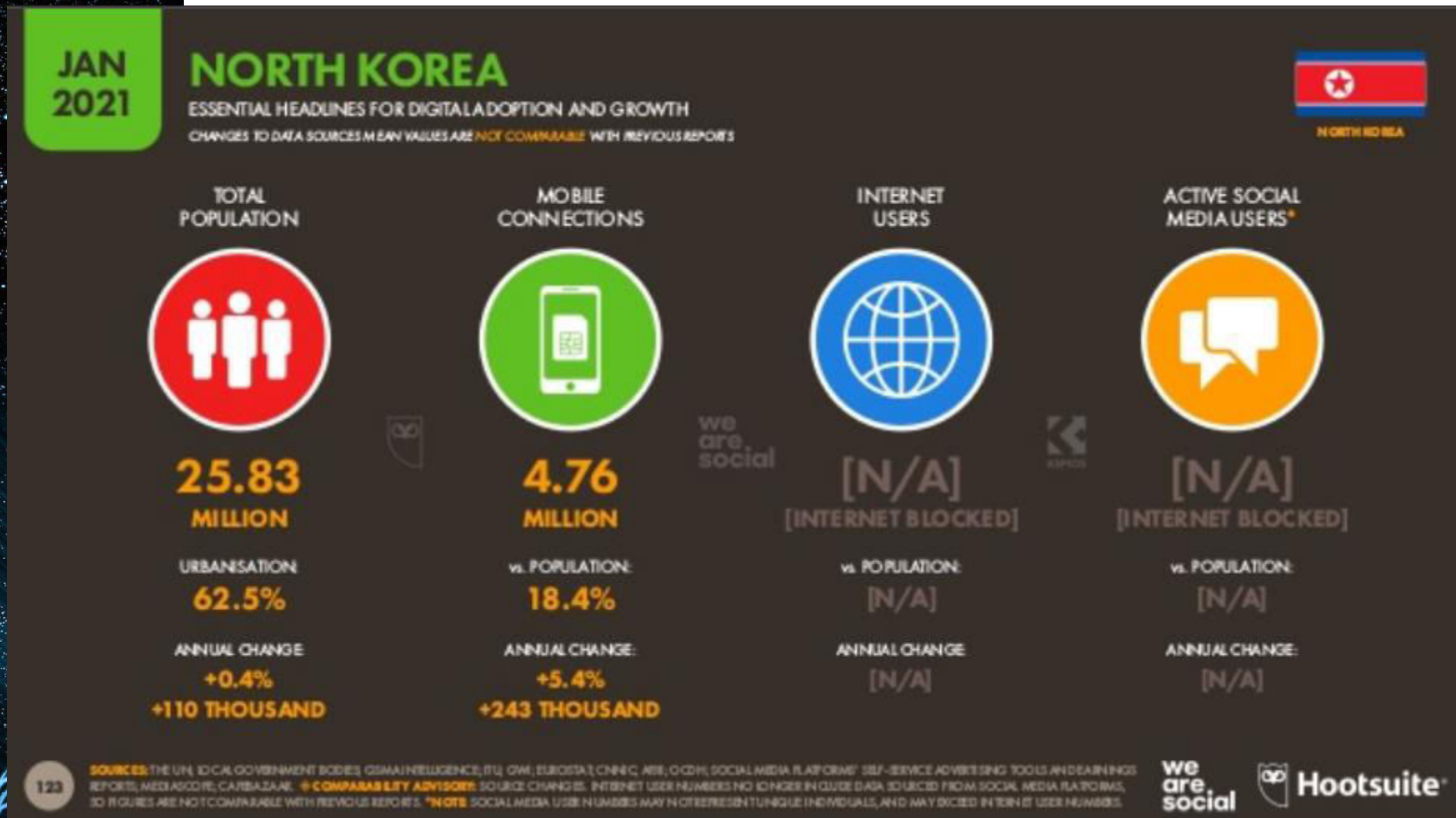
The project aims to attract three times as much traffic as Wikipedia.org.

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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O Admirável Mundo Cibernético em 2021



<https://www.expresso.pt>

CORONAVÍRUS

Um grande passo para uma empresa e um primeiro passo para o resto da Humanidade? Funcionários do Twitter podem trabalhar em casa para sempre

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.

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

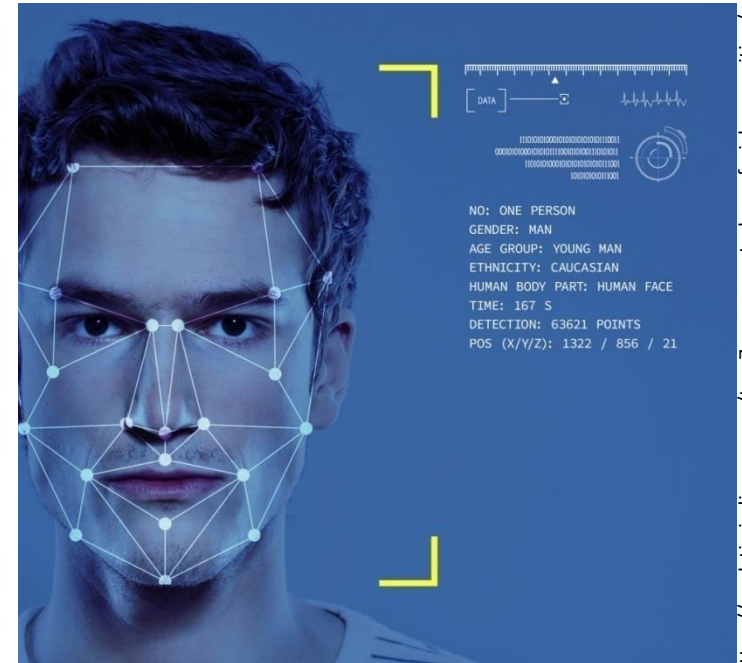
#	GREATEST RELATIVE GROWTH	▲%	▲ USERS
11	MADAGASCAR	+37%	+708,390
12	TIMOR-LESTE	+37%	+150,000
13	BOLIVIA	+36%	+2,317,749
14	COMOROS	+31%	+40,000
15	IRAN	+29%	+16,241,877
16	CUBA	+27%	+1,270,796
17	ITALY	+27%	+11,490,731
18=	GUINEA-BISSAU	+25%	+30,000
18=	NORTH KOREA	+25%	+4,000
18=	SOMALIA	+25%	+300,000

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.

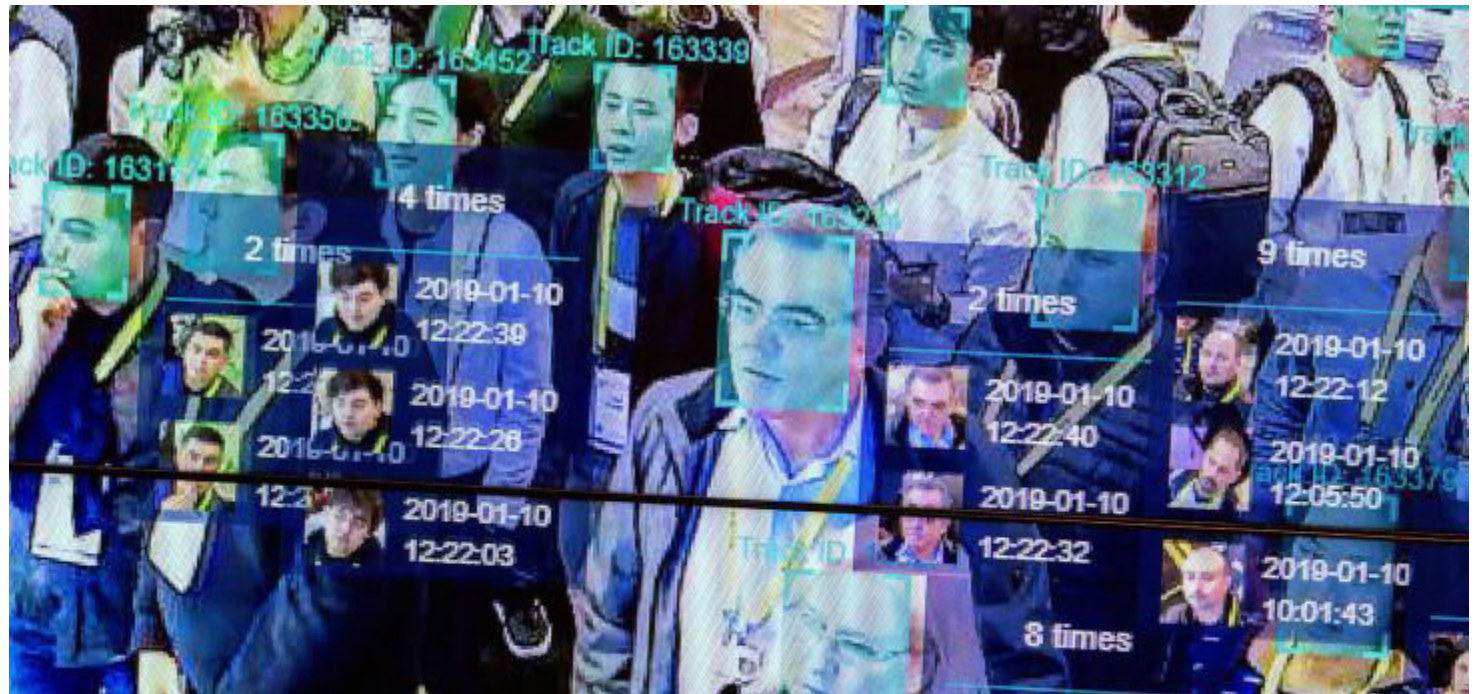
Quem controla o fabricante?

Banned Chinese Security Cameras Are Almost Impossible to Remove



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 o Blogue “Quinta dos Arnaut”



Quinta dos Arnaut

Pesquisa Google

Sinto-me com sorte

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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