



Cyberspace and Digital Societies

Arnaut Moreira

ESDC - IDN – Jan 2022

Agenda

1. From Analog to Digital
2. The Cyberspace Revolution
3. The Connected Society
4. Final Remarks

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Conventional Tools



Ready to use

No instructions

No cookies

**Quick
identification
of possible
hazards**

... but they do not work autonomously ...

Complex Mechanical Machines



In 1725 Basile Bouchon invented the perforated paper tape to control the weaving process in the silk industry

Semiconductors

https://en.wikipedia.org/wiki/Transistor#/media/File:Bardeen_Shockley_Brattain_1948.JPG



Shockley, Bardeen, and Brattain were jointly awarded the 1956 [Nobel Prize in Physics](#) "for their researches on semiconductors and their discovery of the transistor effect"

... a huge leap forward for digitalisation ...

Digital Tools



What is this?

Read the instructions

Register on the Web

Insert your data

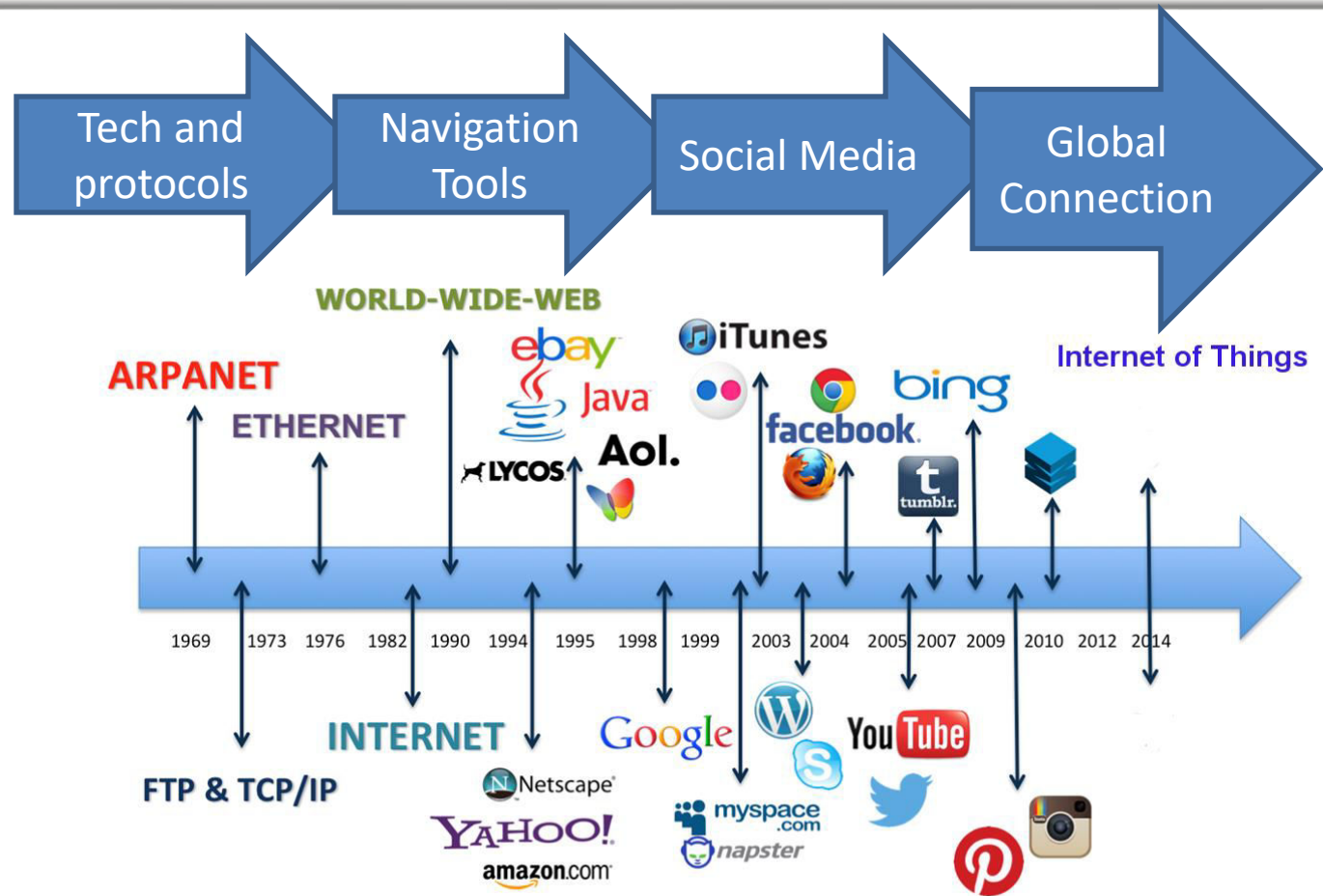
Downloads apps

**Accept policies, cookies
and so on...**

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Internet Evolution in four phases



Some Current Trends in the Digital Age

Communications and Mobility

Internet of Things and Artificial Intelligence

Blockchain

Augmented Reality

Natural Interfaces

Quantum Computing

Mobile Phones on the lead

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

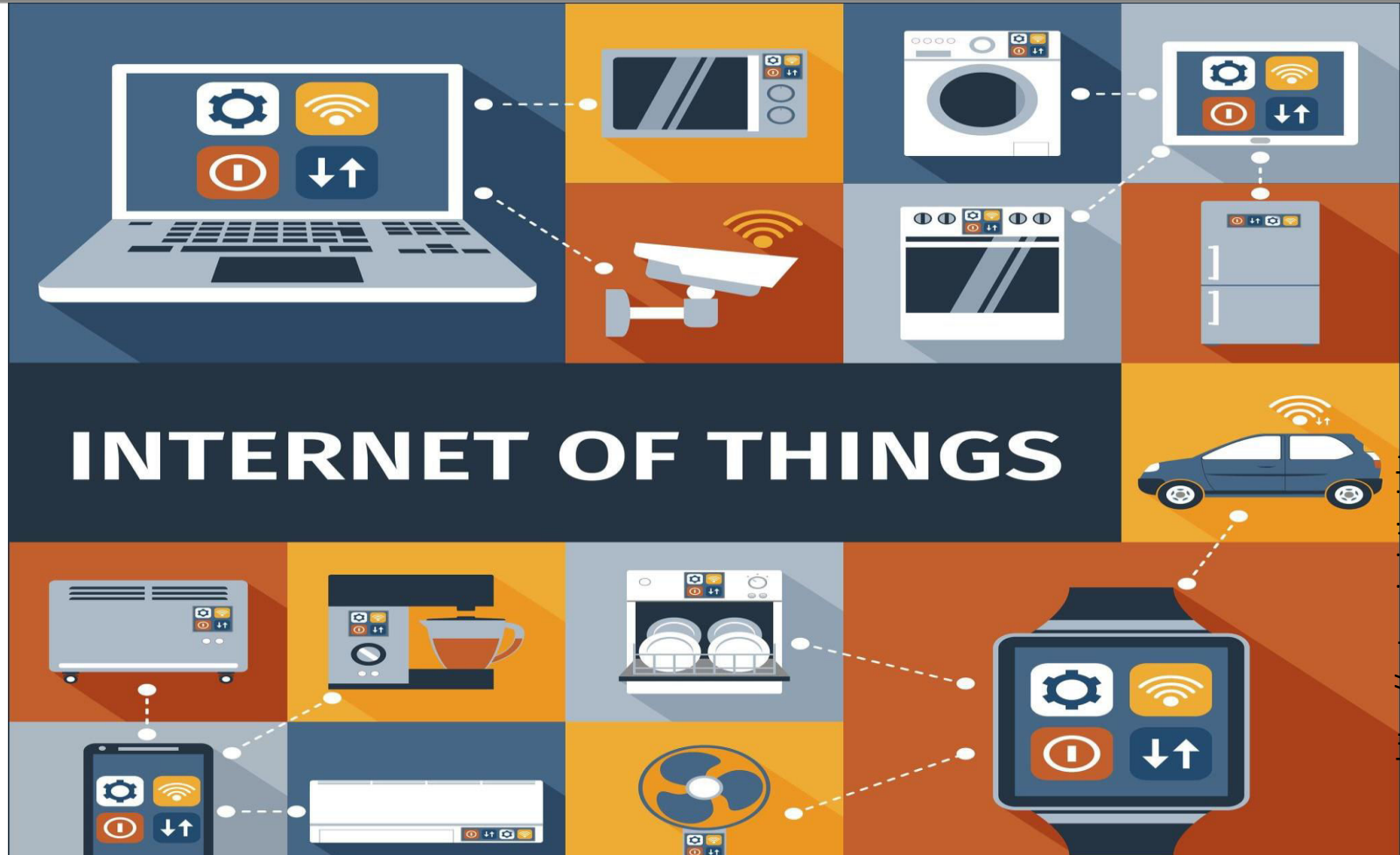
<https://www.slideshare.net/kepios/global-digital-statbites-001>

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.

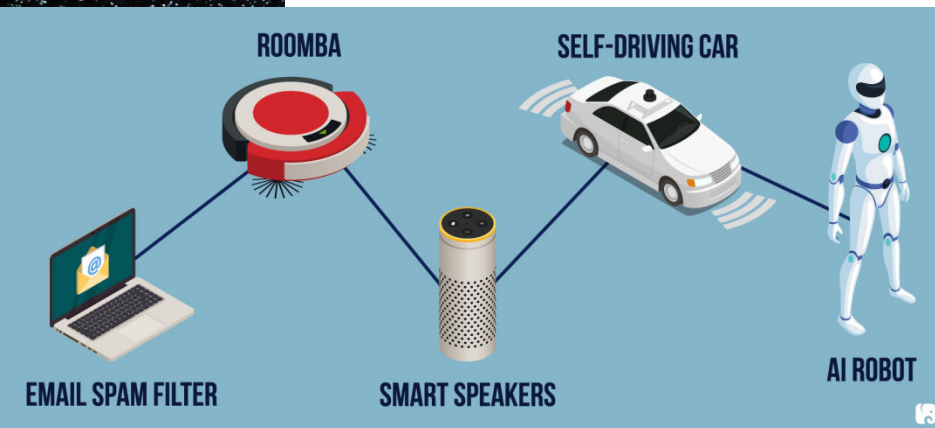
The IOT Trend



In 2021 the number of connected devices exceeds already 50 billion

Artificial Intelligence

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

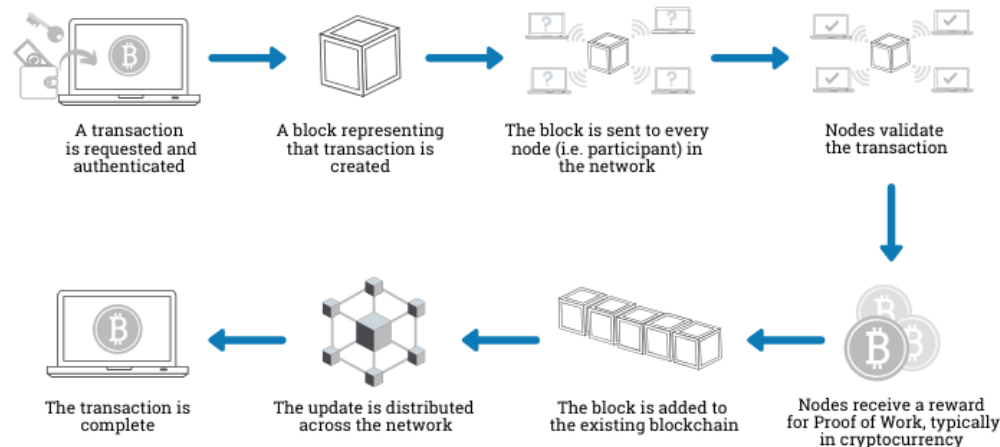


An AI machine can perceive, evaluate, and act more quickly and accurately than a human

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’.

Augmented Reality

Objects that reside in the real world are enhanced by computer-generated perceptual information



Natural Interfaces

Touch, gestures, voice ...



<https://joewilcox.com/2010/04/01/the-most-natural-user-interface-is-you/>



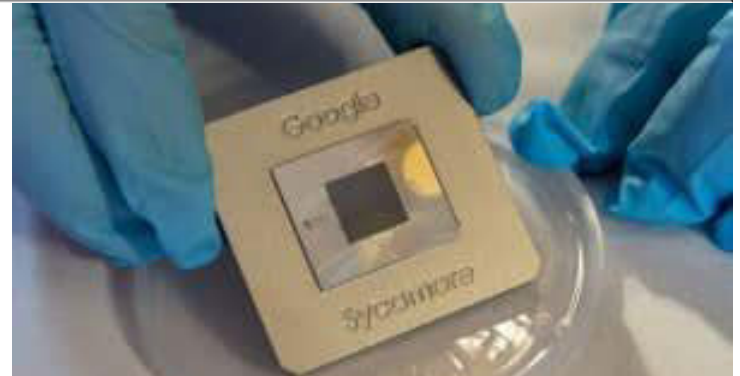
<https://digitalspace.io/2020/03/30/natural-ui/>



<https://www.interaction-design.org/>

Quantum computing

Classical computers encode information in binary “bits” that can either be 0s or 1s.



In a quantum computer we work at electron and sub-electron level.

The basic unit of memory is a quantum bit or qubit that has more than two states.

Qubits are made using physical systems, such as the spin of an electron or the orientation of a photon.

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The Digital World 2021

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%



we
are
social



we
are
social



Hootsuite®

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.

Connected Society



**CONNECTED
SOCIETY**

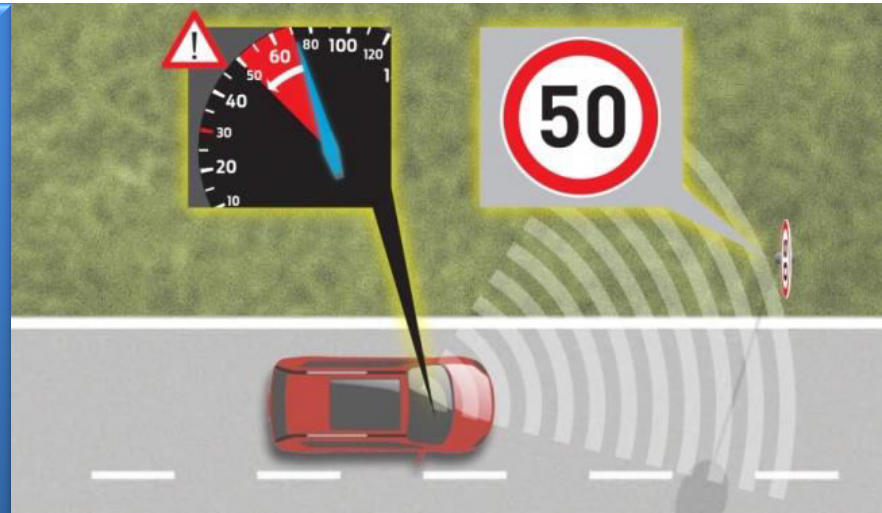
A **society** in which people and people, people and objects, things and things, online and offline, one to one, one to many and many to many are **connected** using digital technology

Do we still trust Humans ?

Humans get distracted, get stressed, get angry...

With 5G and AI implementation, action controls will be swiftly transferred from humans to machines

Car systems recognize speed limit signs and will adjust your cruise control accordingly.



Jobs in the Digital Age ?

The 10 fastest-growing remote job categories in 2021 :

Marketing, administrative, human resources and recruiting, accounting and finance, graphic design, customer service, writing, mortgage and real estate, Internet and e-commerce, and project management

<https://www.flexjobs.com/>

Working from Home will
become the new normal



Virtual worlds are the future ?

Metaverses are 3d Virtual Worlds

You create your own Avatar to interact with other people



You can buy virtual land, virtual shops and sell there your virtual goods. Nike is preparing to sell virtual sneakers for your Avatars. Bitcoins are necessary !

Democracy in the Digital Age ?

Anyone can be a blogger and express his opinion

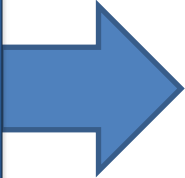
Extremisms are soaring

The political center, where consensuses were created, is under great stress

Societies are becoming more politically polarized

Governments and the Open Cyberspace

USA feels
comfortable
with an
Open
Cyberspace



The 10 most valuable tech companies in the world:

Apple Inc. ([AAPL](#)): \$2.35 trillion
Microsoft Corp. ([MSFT](#)): \$2.2 trillion
Alphabet Inc. ([GOOG](#), [GOOGL](#)): \$1.85 trillion
Amazon.com Inc. ([AMZN](#)): \$1.7 trillion
Facebook Inc. ([FB](#)): \$1 trillion
Taiwan Semiconductor Manufacturing Co. Ltd. ([TSM](#)): \$600 billion
Tencent Holdings Ltd. (TCEHY): \$560 billion
Nvidia Corp. ([NVDA](#)): \$525 billion
Samsung Electronics Co. Ltd. (005930.KS): \$440 billion
ASML Holding NV ([ASML](#)): \$350 billion

Governments and the Open Cyberspace

China feels
uncomfortable
with an Open
Cyberspace

Content Censorship

Blocking Websites

Foreign Websites loading times

Governments and the Open Cyberspace

Russia is
looking for a
National
Internet

RUNET

“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/>

≡ pravda.ru

МИР ПОЛИТИКА ЭКОНОМИКА СПОРТ ТУРИЗМ РОССИЯ АРХИВ

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

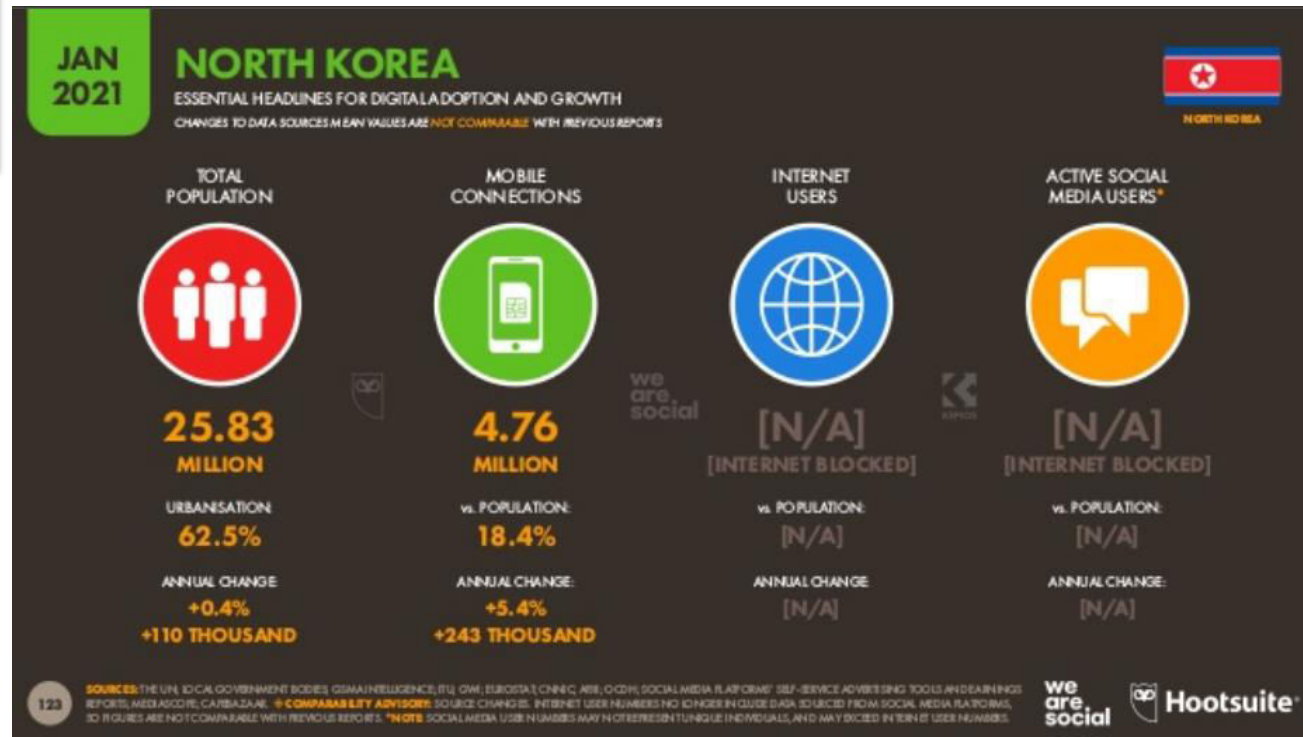
23.12.2019 20:54
ПОЛИТИКА

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

Governments and the Open Cyberspace

North Korea
radical
approach

No Internet users
No Social Media



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Risks and Vulnerabilities

```

        $stmt = $mysqli->prepare("DELETE FROM posts WHERE post_id=?");
        $stmt->bind_param("i", $post_id);
        $stmt->execute();
        $result = $stmt->get_result();
        if ($result) {
            header("Location: index.php", true, 301);
            exit();
        } else {
            echo lang("sqlError");
        }
    } else {
        echo lang("sqlError");
    }
}

// Postaus poistettu onnistuneesti
header("Location: index.php", true, 301);
exit();

```

111 billion lines of new software code being produced each year — which may contain errors and bugs that will impact on the functioning of modern societies

<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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