



# Cyberspace and Digital Societies

***Arnaut Moreira***

ESDC - IDN – Sep 2022

# Agenda

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



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# 5500 years ago: The first handwritten message

The Kish tablet, from Mesopotamia, 3500 BC



Earliest known handwritten document

October 2022 Issue

EXPLORE ▾

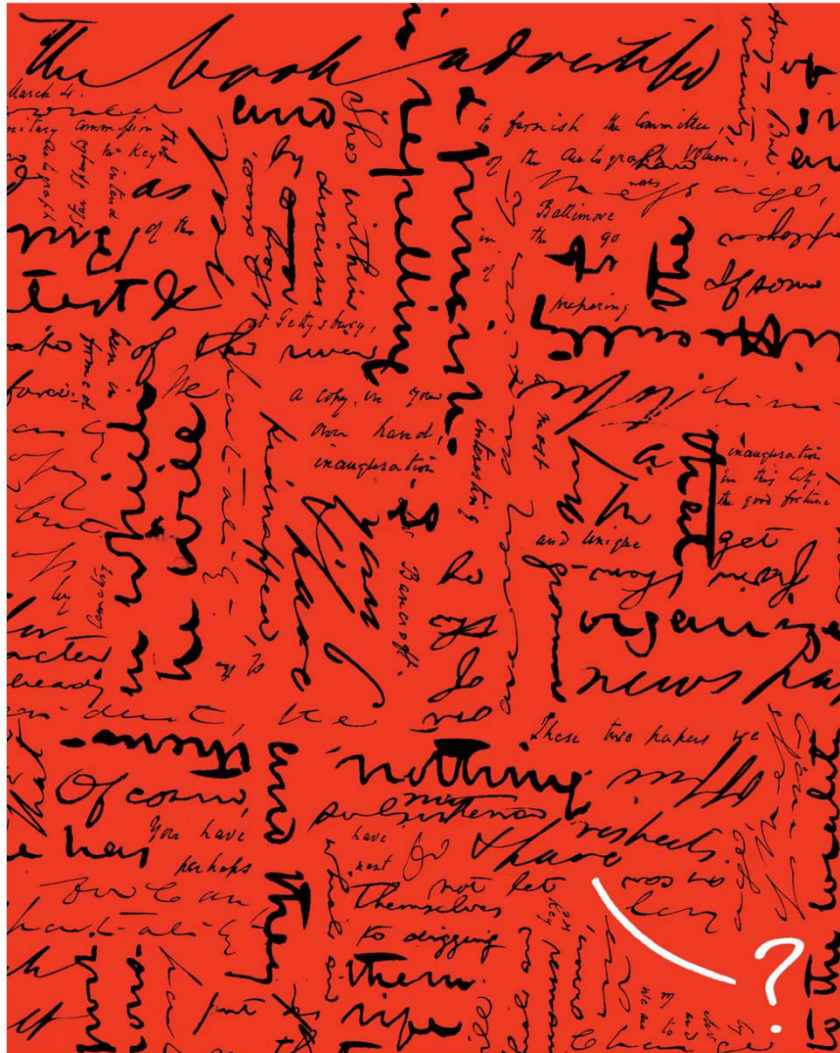


Illustration by Katie Martin. Source: Library of Congress.

CULTURE

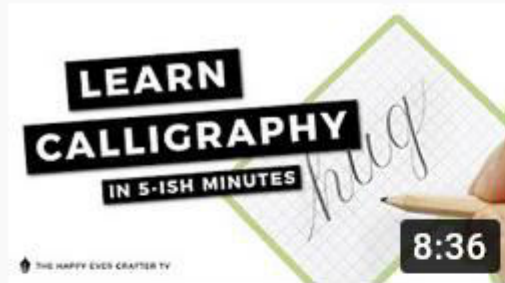
# GEN Z NEVER LEARNED TO READ CURSIVE

How will they interpret the past?

By Drew Gilpin Faust



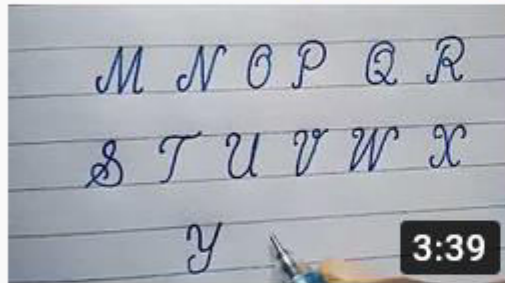
# Of course you still can learn handwriting in the Internet ...



## Learn Calligraphy in 5(ish) Minutes With Just a PENCIL!

The Happy Ever Crafter

66K views • 6 months ago



## Cursive letters A-Z for beginners | Beautiful cursive...

WhyWisdom

9.2K views • 1 month ago



## 5 steps to improve your cursive handwriting

Vinícius Borges

1M views • 4 years ago

... or find a good app to translate to typeface

The 10 best  
handwriting  
recognition apps in  
2022

How do handwriting  
recognition apps work?

## Best Handwriting Recognition Apps



**Neil Cumins**

Business News Daily Contributing Writer  
Updated Aug 05, 2022

The best handwriting recognition apps can turn your handwritten text into regular typeface.

# The Digital Era

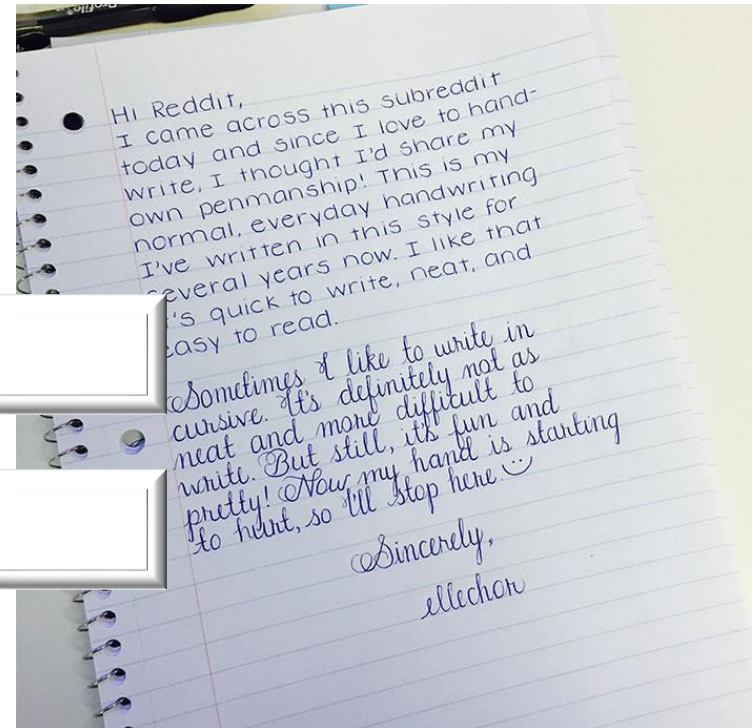
It is not just about connectivity,  
speed and apps for everything ...



... it is also about :

Replacing Techniques ...

Erasing Competencies ...

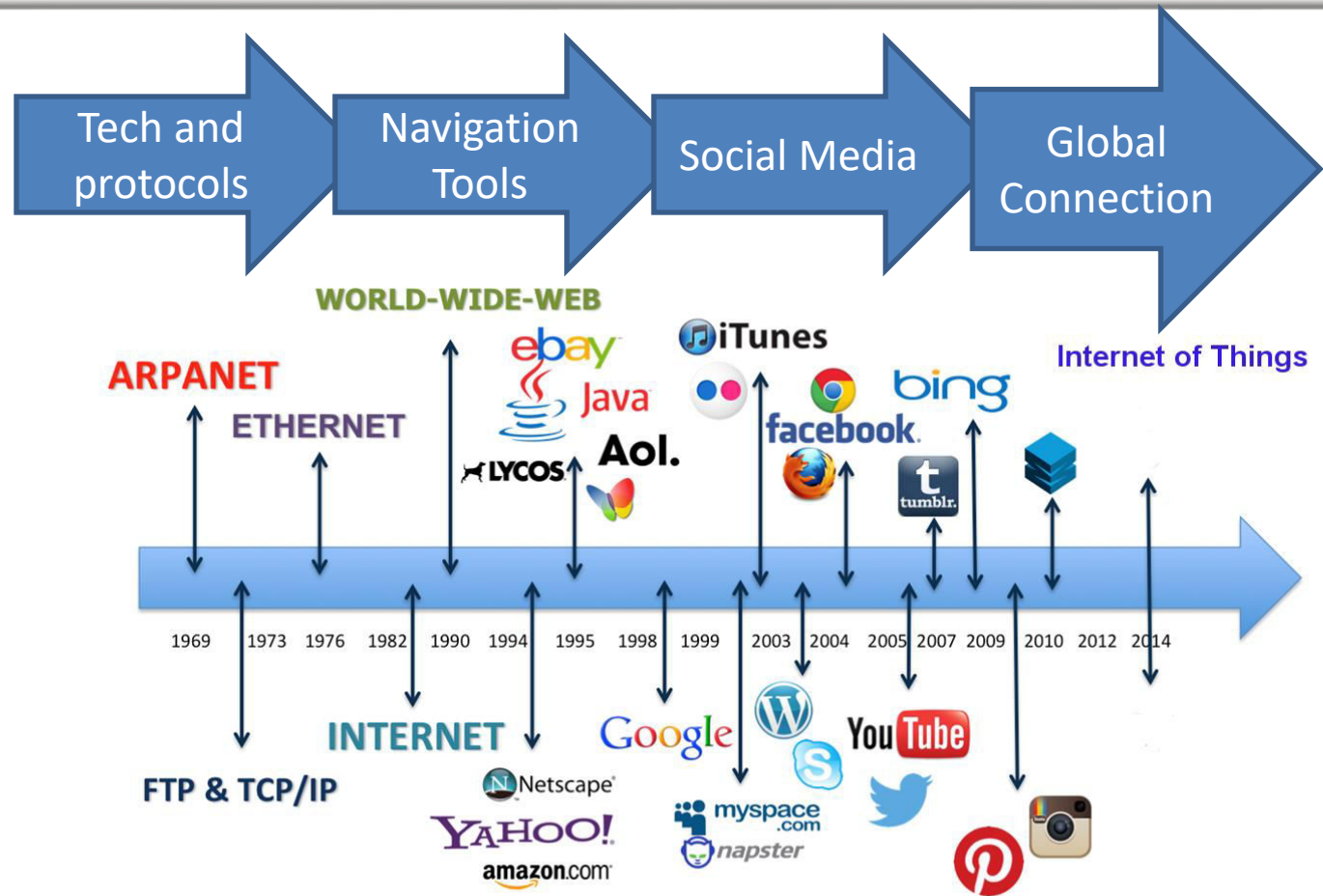




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# Internet Evolution in four phases



# 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

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®**

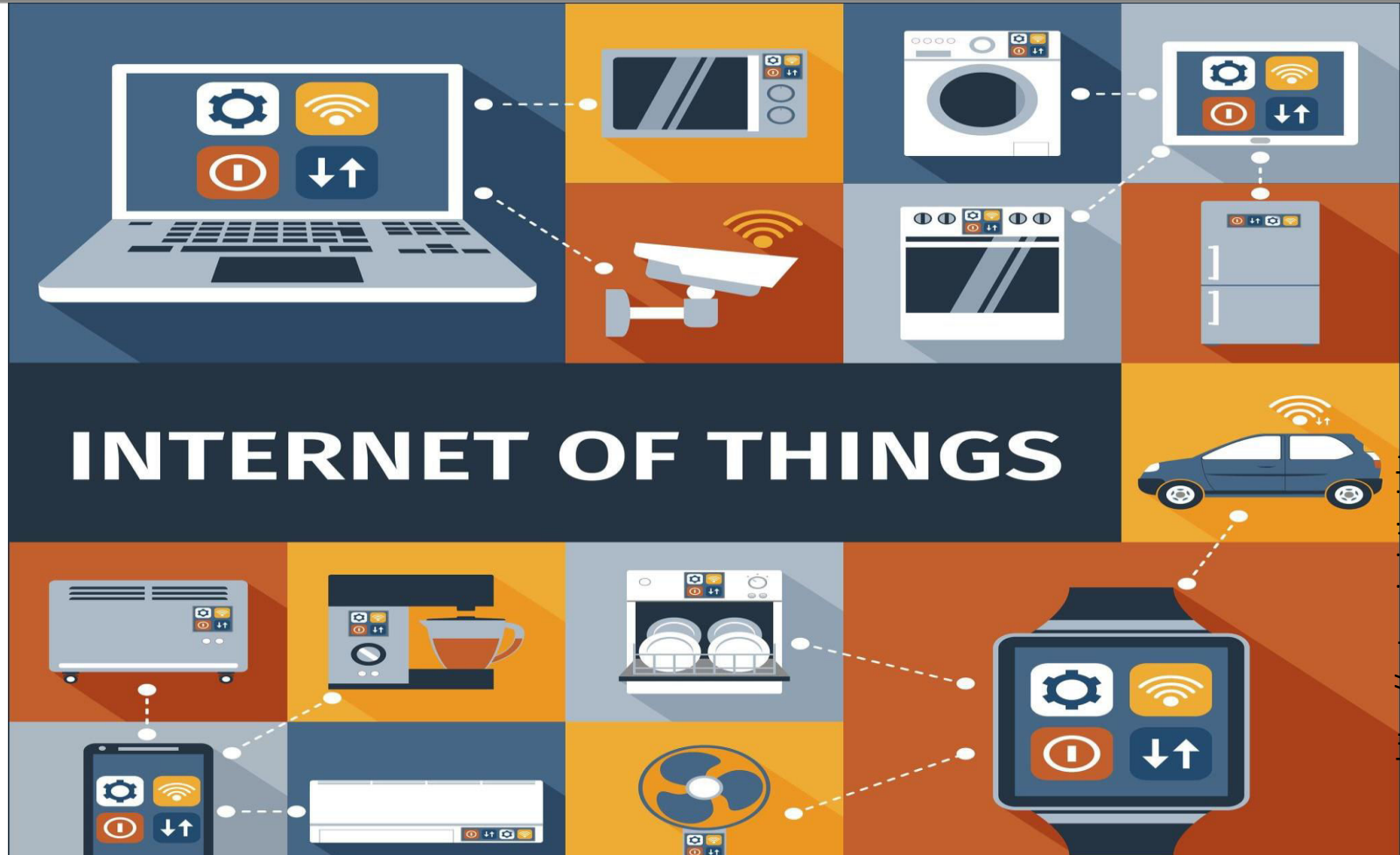
<https://datareportal.com/reports/digital-2022-july-global-statshot>

# 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

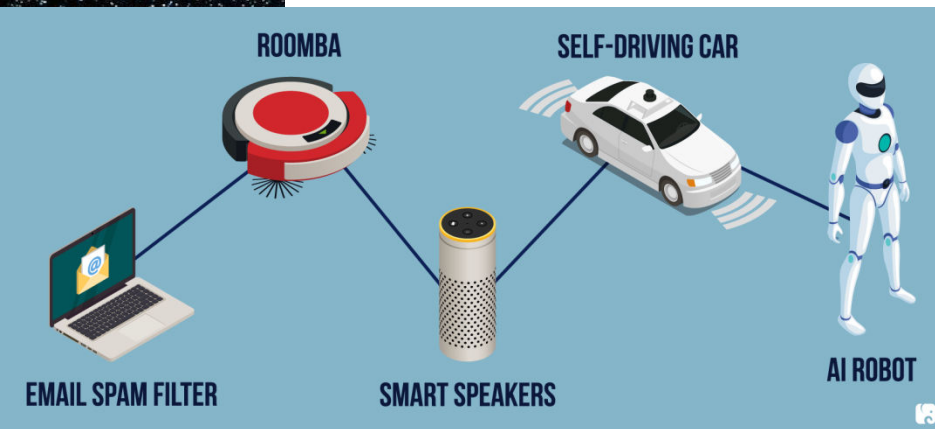


The number of connected devices exceeds already 50 billion



# Artificial Intelligence

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

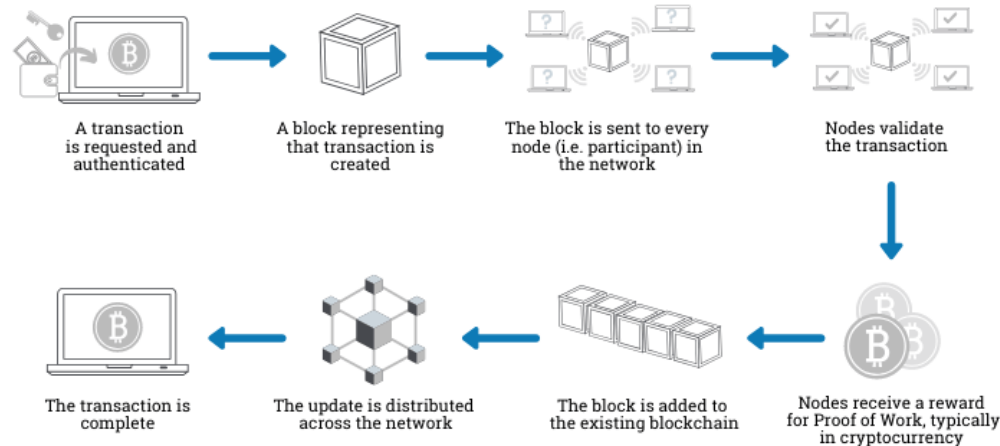


**An AI machine can perceive, evaluate, and act more quickly and accurately than a human**

# 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

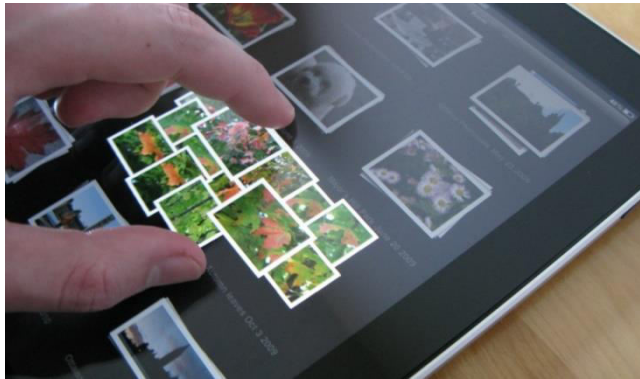
Objects that reside in the real world are enhanced by computer-generated perceptual information





# Natural Interfaces

Touch, gestures, voice ...



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



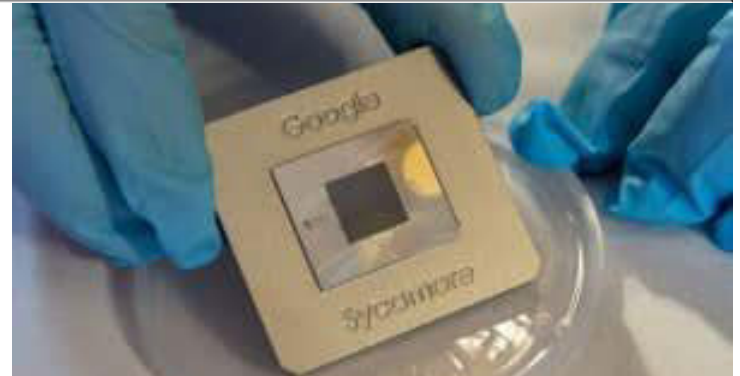
<https://digitalspace.io/2020/03/30/natural-ui/>



<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 2022

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%**

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

we  
are  
social

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# 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 :

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

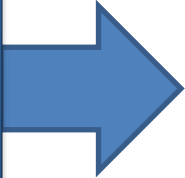
The political center, where consensuses were created, is under great stress

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

**Only National Intranet**

**Fewer than 1,000 people are able to access international websites**

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# Risks and Vulnerabilities

```

        $stmt = $conn->prepare("DELETE FROM posts WHERE post_id=?");
        $stmt->bind_param("i", $post_id);
        if ($stmt->execute()) {
            echo "Postaus poistettu onnistuneesti";
        } else {
            echo "Virhe: " . $conn->error;
        }
    }
}

```

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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