if you think education is expensive - try ignorance

ARS ELECTRONICA
Art, Technology & Society

Was ist denn nun diese Digitalisierung?

Themen der Digitalen Transformation

Education

Digital Health and Medicine

Cyber Crime & Digital Defence

Digitale Rechtsordnung
- Digital Governance
- Digital Citizenship
- Blockchain and digital contracts
- Technology Regulations
- Copyrights and IPR

Digitale Wertschöpfung
- Digitale Betriebswirtschaft
- Digitale Volkswirtschaft
- Crypto Currencies
- Digitale Unternehmensführung - Digital Leadership
- Network Economy
- Digital Markets, Digital Services

Digitale Produktion / I 4.0
- Digitale Integration von Industrieanlagen - Digital Twin
- Supply Chain Management
- Ressource and Data Management
- Predictive Maintenance
- IoT
- AI and ML in industrial Automation

Future Mobility, Traffic and Logistics

Cybersecurity

Big Data

Mensch Maschine Schnittstelle
- VR, AR, XR
- Digital Assistants
- Smart Materials and New Interfaces
- Robot-Psychology
- Interfaces for elderly people
- Interfaces for people with special needs

Urban planing, Smart Cities

Digitale Arbeit
- Workplace of the future
- Hybrid Office

Anwendungen von AI und ML- Implikationen und Konsequenzen

AI / ML

Ecology and Digital Technology
- Recycling of precious raw material
- Digital Tech für die Logistik der Kreislaufwirtschaft
- Sustainable Production of Digital Devices

Gottfried Wilhelm Leibniz postulierte 1666 in Analogie zu Ramon Llull die Ars Combinatoria, durch die man alle Erkenntnisse auf algorithmische Weise gewinnen kann.
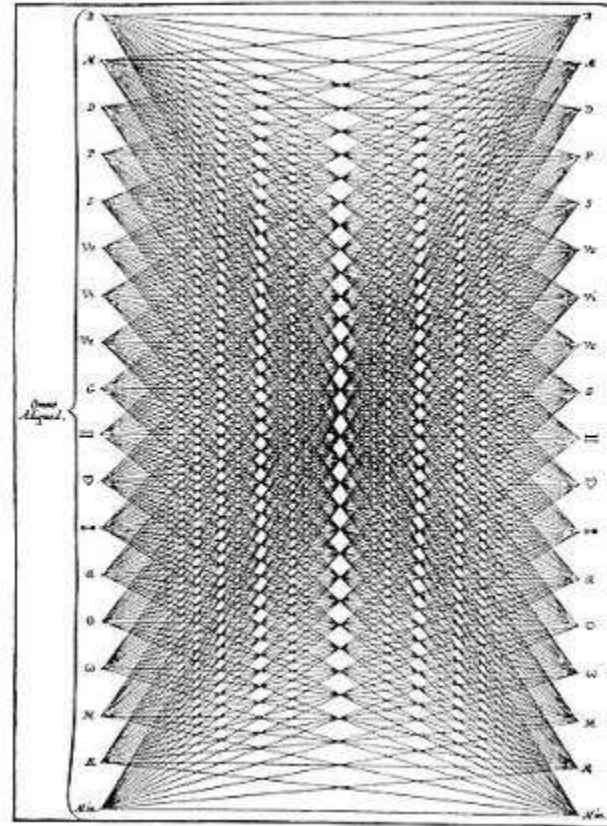
1693 konstruierte Leibnitz seine legendäre Rechenmaschine und begründete dies mit dem Wunsch, den menschlichen Geist von den trivialen Aufgaben des Rechnens zu befreien ...
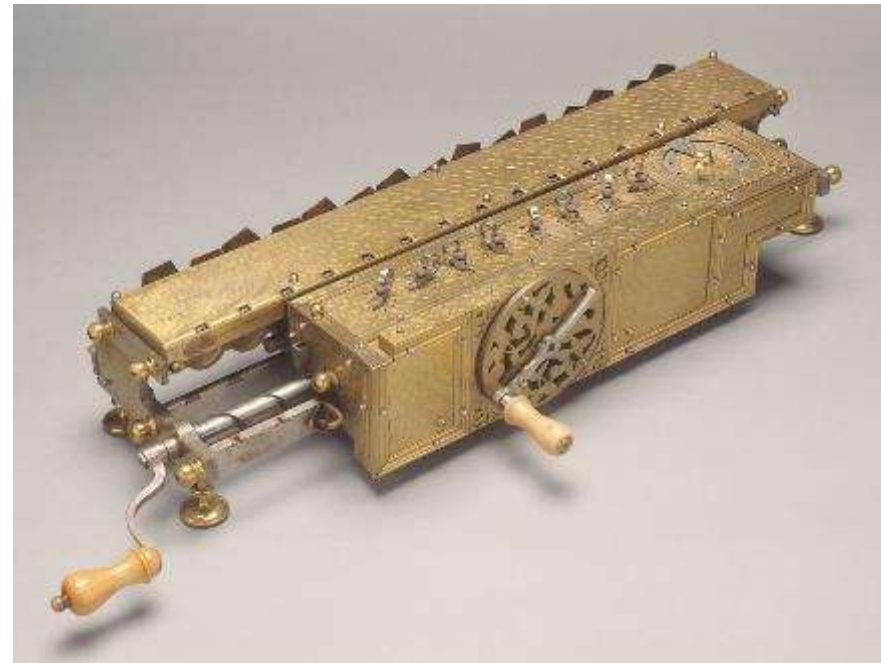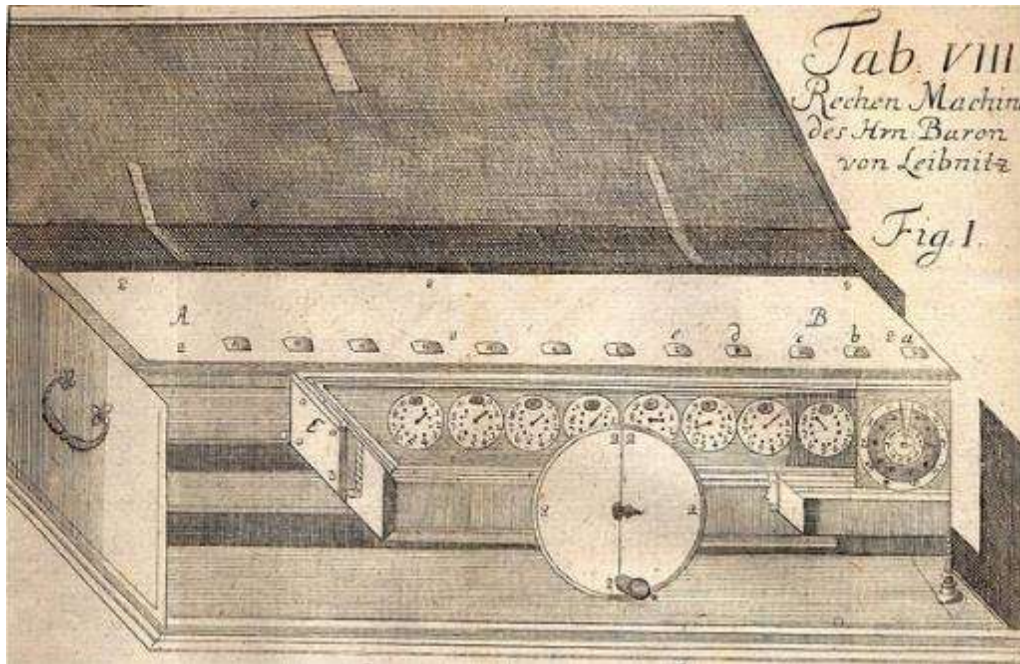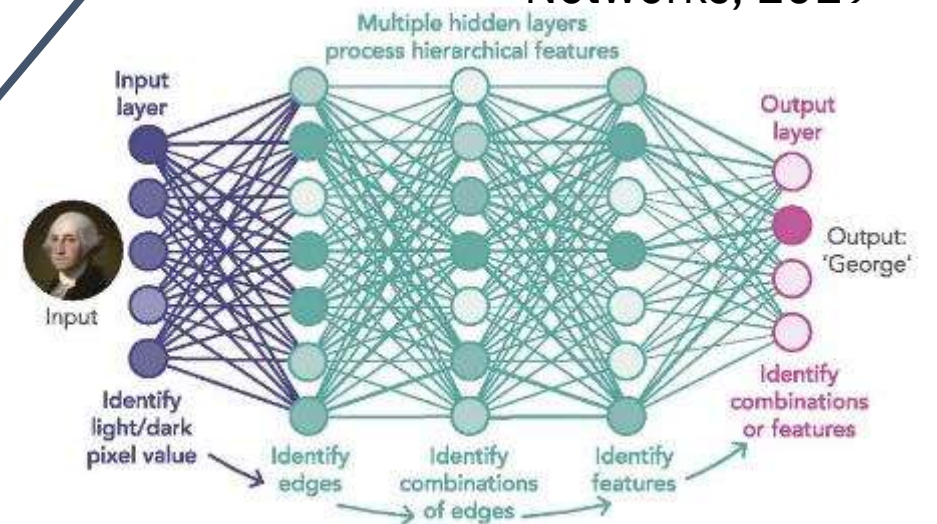
Athanasius Kircher,
1602 – 1680

P. ATHANASIVS KIRCHERVS FVLDENSIS
è Societ: Iesu Anno ætatis LIII.

A. Kircher, Tabula Combinatoria, Rome, 1641

Schematische Darstellung eines Convolutional Neural Networks, 2019
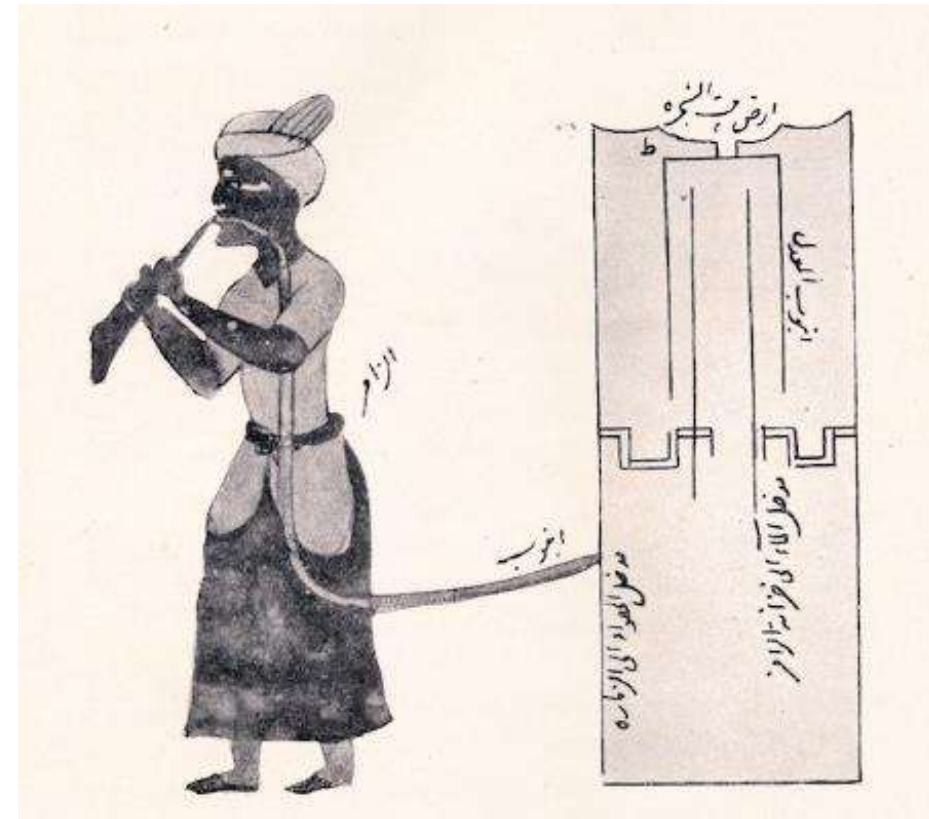
Badīʿ az-Zaman Abū l-ʿIzz ibn Ismāʿīl ibn ar-Razāz al-Jazarī (1136–1206)

The elephant clock was one of the most famous inventions of al-Jazari
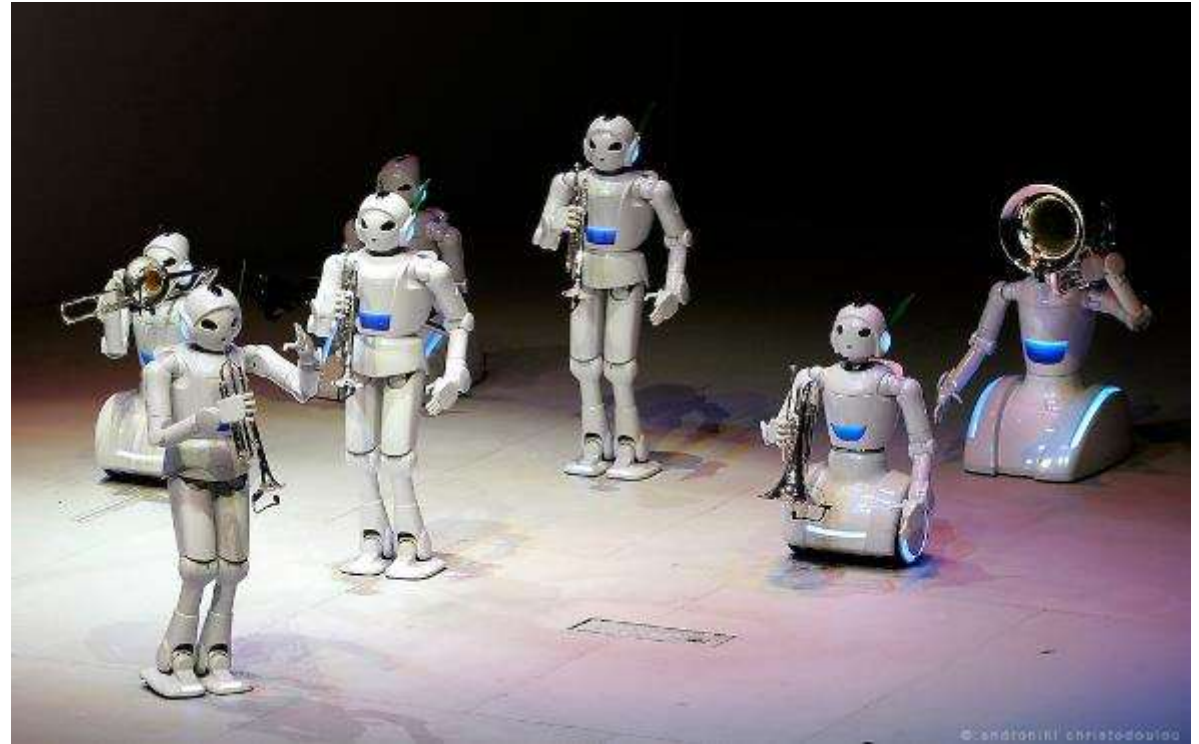
Kitāb al-Daraj (*The book of degrees*),
by Ibn Shākir, Aḥmad ibn Mūsá,
as found in the Saladin library, Bagdad 9.Jh AD

The instrument is believed to have been designed and constructed by Greek scientists and has been variously dated to about 87 BC, or between 150 and 100 BC
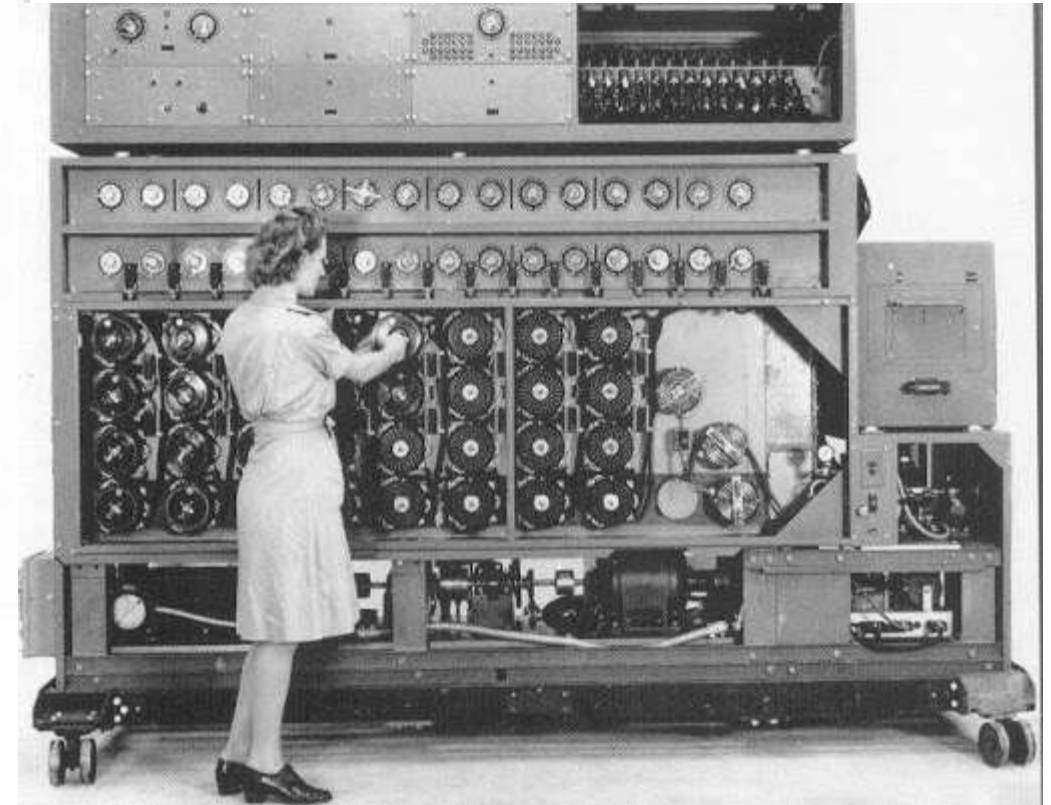
Antikythera mechanism

The Codebreakers
of
Bletchley Park

up to 10,000 people worked there in 1944

Xia Peisu would go on from a PhD in electrical engineering to designing China's first home-grown electronic digital general purpose computer

In April 1960, China's first home-grown electronic digital general purpose computer – the Model 107 – went live. Xia Peisu, the machine's engineer and designer, had just made history.

After decades of war with Japan and the Chinese Civil War in the first half of the 20th Century, the country's technological innovation had fallen behind much of the developed world. Later, caught in the politics of the Cold War, the newly established People's Republic of China was cut off from aid and exports from capitalist nations in the West. Chinese scientists relied heavily on hardware and expertise from the Soviet Union to build up their computing power.

But when that relationship dissolved in 1959, China was once again isolated and it had to look inward for a way forward in an increasingly computerised world. Within a year of the Soviet Union withdrawing aid, Xia delivered the 107 – China's first step on the road to independence in computing.

Today, China is a **global leader** in computer production. In 2011, China surpassed the US to become the **world's leading market for** PCs, and the **desktop PC segment of their computer industry alone is projected to bring in a revenue of over $6.4bn (£4.9bn)** this year.

But there was more work to be done than making computers. To build a new computer industry – and a new field of computer science to support that industry – China needed trained personnel. Here, too, Xia was essential.

She helped shape some of China's first computing and computer science institutions and developed their training materials. She taught the first computer theory class in the country. Over her career, she would usher hundreds of students into the country's burgeoning field of computer science.

ars electronica

18.–23. September 1979
im Rahmen des Internationalen Brucknerfestes '79

Linzer V...
Österreichischer Rundfunk/Studio Oberösterreich

ars electronica

18. September 1979 bis

Mit der Elektronik ist ein progressives Element in unsere technische Welt gekommen, dessen Einfluß sich nicht auf Industrie und Forschung beschränkt, sondern in alle Lebensbereiche eingreift. Damit ist eine Entwicklung in Gang gekommen, die erstaunliche und phantastische Aspekte eröffnet, in anderen Belangen aber auch Kritik und Skepsis hervorruft.

Kommunikation auf eine neue Basis gestellt. Die Auswirkungen reichen bis in Denk- und Verhaltensweisen im privaten

ARS ELECTRONICA, der elektronischen ...sichtbar werden lassen.

...esonderen Höhepunkt bilden ...aufführungen im Brucknerhaus: ...die Live-Visualisierung der Musik ...ppe „Ekseption" mit Ludwig ...g. Zweitens „Eberhard Schoener ...ert", eine Konfrontation elektro- ...Rockmusik mit der Klangwelt ...a und Bali.

...s wird der „Große Preis der ...ECTRONICA" vergeben.

...men der ARS ELECTRONICA ...n Großen Foyer des Bruckner- ...eine Ausstellung und Präsen- ...lektronischer Musikinstrumente ...räte führender Firmen aus USA, ...BRD und Österreich statt.

...ORF wird ARS ELECTRONICA ...esonderen Programmschwer- ...punkten Hörfunk und Fernsehen bilden.

Veranstaltungskalender:

Dienstag, 18. September 1979, 19.00 Uhr, Brucknerhaus, Freigelände am Donauufer
(Eintritt frei)

Eröffnung der ARS ELECTRONICA

Mittwoch, 19. September 1979, 9.30 Uhr bis 18.00 Uhr, Brucknerhaus, Kleiner Saal
(Eintritt frei)

Der modulierte Mensch. Wechselwirkungen zwischen Elektronik, Gesellschaft, Medien, Technik, Medizin und Kunst.

Dr. Herbert W. Franke (München), Leiter des Symposiums: Einführende Worte.

Prof. Dr. Dipl.-Ing. Ernst Zemanek (Stuttgart/Wien): „Macht und Ohnmacht der Informationsgesellschaft."

Univ.-Prof. Dr. Fritz Mundinger (Freiburg/Breisgau): Computertechnik ..., Grenzen,

...vision für das

...burg): ...ie Technik."

...mburg): ...ronisch

...agreb): ...nst."

...979, 20 Uhr ...sterreich

...Der Wurm im ...schlagzeug, Laser und Publikum.

1979

With electronics, a progressive element has come into our world whose influence is **not limited to industry and research, but extends to all areas of life**. A development has thus been set in motion that opens up astonishing and fantastic aspects.

Das Zeitalter der Digitalisierung ist

das Zeitalter der Partizipation

1979

1979

2 years before the first Personal Computer from IBM,

3 years before the first CD-Player from Sony,

1981

1982

1979

2 years before the first Personal Computer from IBM,

3 years before the first CD-Player from Sony,

1979

analog

digital

1981

1982

SONY

WALKMAN

STEREO CASSETTE PLAYER
LECTEUR DE CASSETTE STEREO

The IBM Personal Computer ... and me.

IBM

1979

The Beginning of the Age of Participation

...and a new Dream of Mobility

A major component of the Walkman advertising campaign was **personalization of the device**. Prior to the Walkman, the common device for portable music was the portable radio, which could only offer listeners standard music broadcasts.

Having the ability to customize a playlist was a new and exciting revolution in music consumption.

The ability to play one's personal choice of music and listen privately was a huge selling point of the Walkman, especially amongst teens, who greatly contributed to its success

A diversity of features and styles suggested that there would be a product which was "the perfect choice" for each consumer. This method of marketing to an extremely expansive user-base while maintaining the idea that the product was made for each individual "[got] the best of all possible worlds—mass marketing and personal differentiation".

First types of personal computers in 1977.
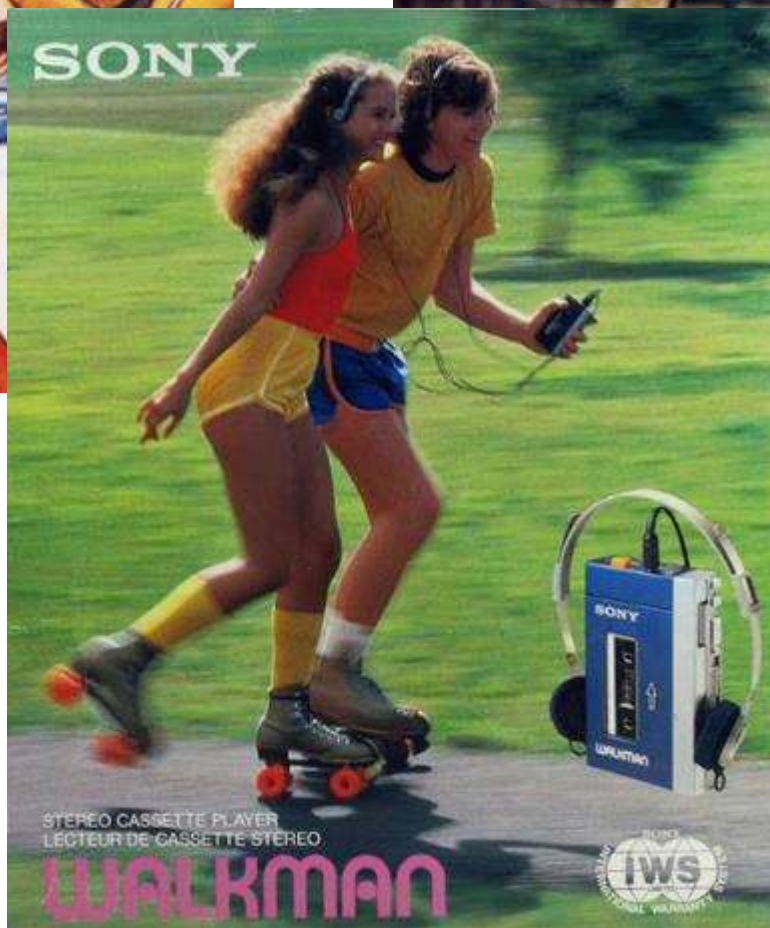Commodore PET, Apple II, TRS-80 Model I.

1979
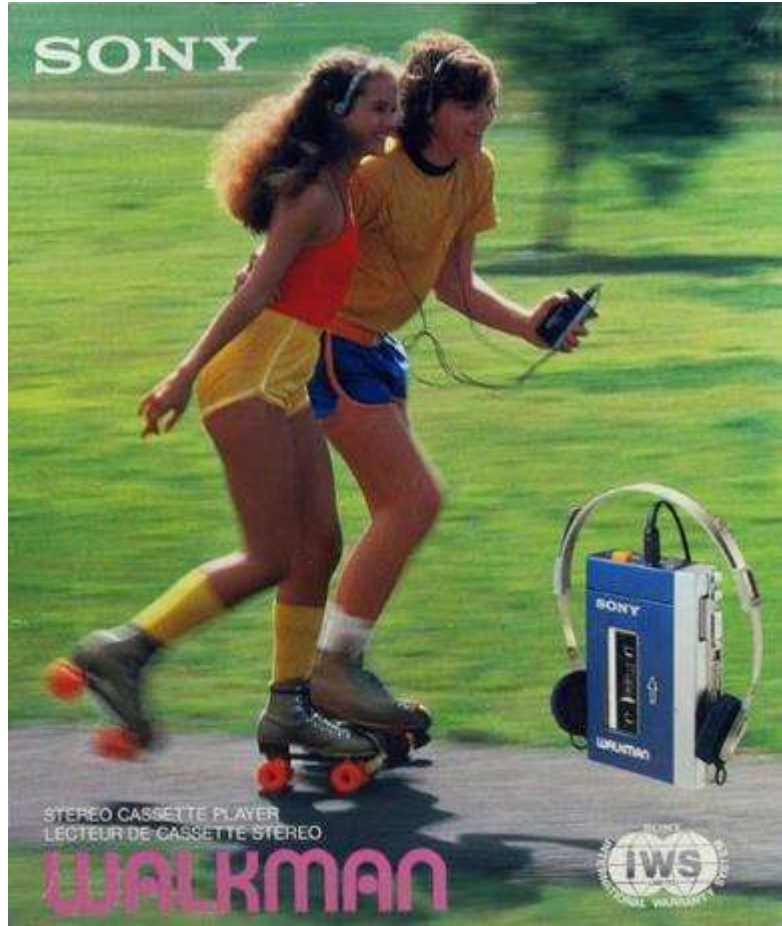
1979 2019

Doesn't look very different ... but

2019

1930

Doesn't look very different ... but

1979

You can decide what you want to listen

We decide for you what you want to listen

We have to change the question:

Not what technology can do
but
What do we want to do with it?

To change the way we think about technology,

we need to change the way we talk about technology.

Google's Hand-Fed AI Now Gives Answers, Not Just Search Results

Microsoft's AI can detect your emotions (but only if you're angry)

Google's AI Reads Retinas to Prevent Blindness in Diabetics

Machine learning has revealed exactly how much of a Shakespeare play was written by someone else

It's not AI that does or achieves something ... It's always us who do it with the help of AI

Its not about technology but always about us and the way we deal with it!

Wem gehört die digitale Welt

Selbstbestimmung – Verantwortung – Demokratie

im Zeitalter von

Social Media und Artificial Intelligence

Wem gehört die digitale Welt

Selbstbestimmung – Verantwortung – Demokratie
im Zeitalter von
Social Media und Artificial Intelligence

...und nach
CORONA

Demographie der digitalen Welt

Estimated Bandwidth Usage by Country (Gbps)
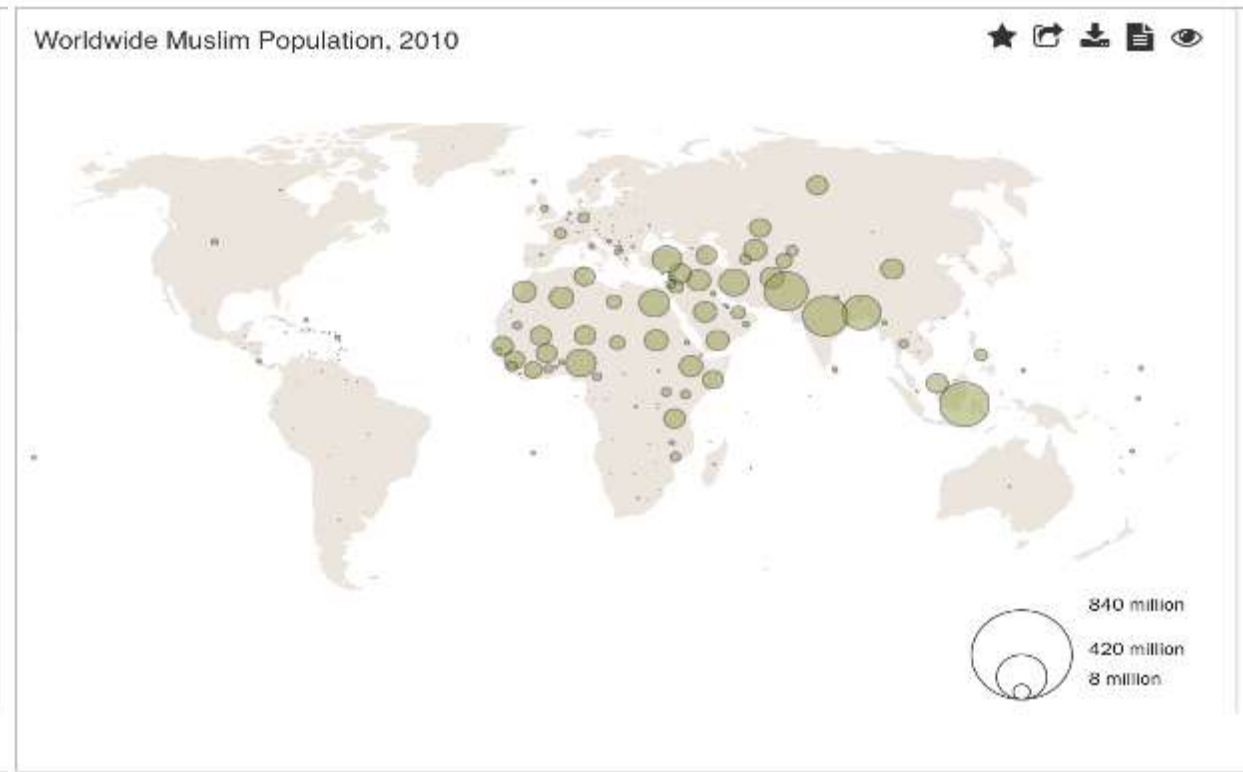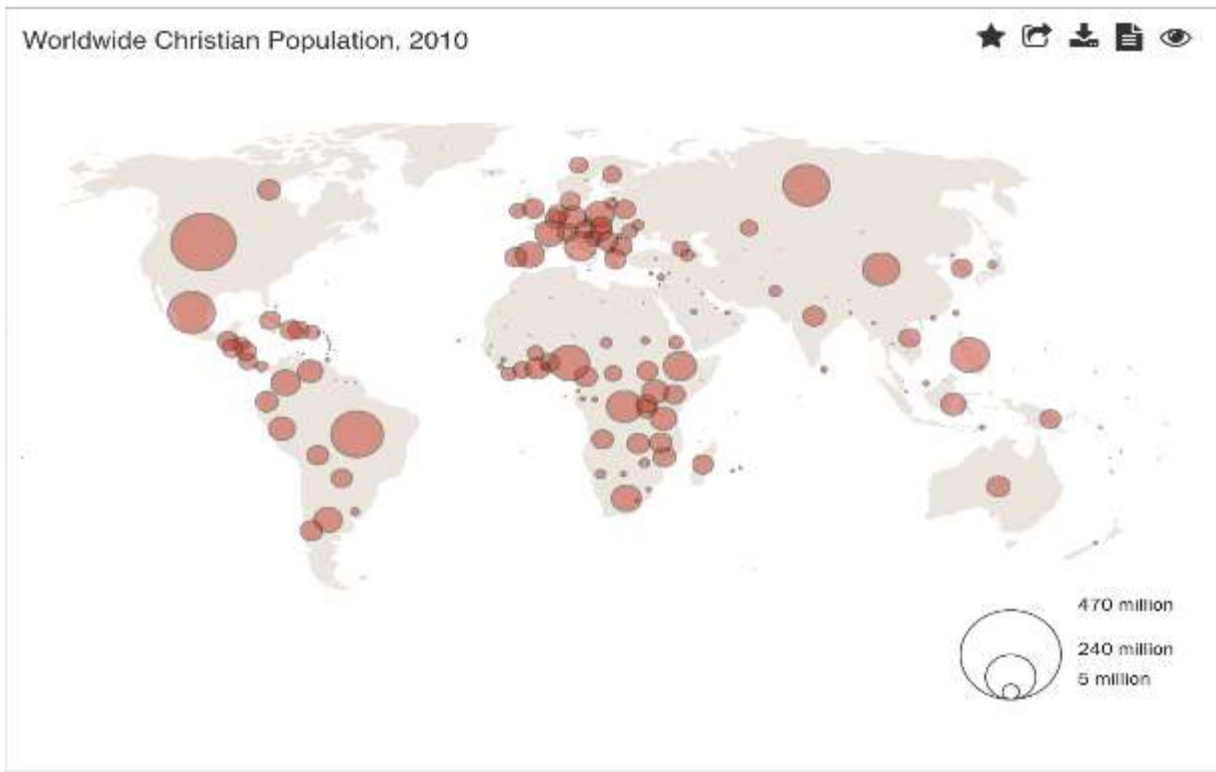
- 1,000+
- 200 - 999
- 50 - 199

>4,83 Mrd. Menschen sind im Internet

>5,11 Mrd. Menschen haben ein Smart Phone

>3,78 Mrd. Menschen nutzen Social Media

>2,7 Mrd. Menschen nutzen Facebook

2.Quartal 2020

Buddhists ☸	Christians ✝	Hindus 🕉	Jews ✡	Muslims ☾	Unaffiliated ○
488 million	2.2 billion	1 billion	13.9 million	1.6 billion	1.1 billion
7.1%	31.4%	15.0%	0.2%	23.2%	16.4%
of World Population	of World Population	of World Population	of World Population	of World Population	of World Population

Worldwide Christian Population, 2010 ★ ⤴ ⬇ 📄 👁

470 million
240 million
5 million

Worldwide Muslim Population, 2010 ★ ⤴ ⬇ 📄 👁

840 million
420 million
8 million

Germany … 72.3 Mio – 89,6%
Nigeria …   91,6 Mio – 47,7%
Russia …   109,5 Mio – 76,4%

Japan …   118,6 Mio – 93,3%
Indonesia … 143,3 Mio – 53,7%

India … 452 Mio – 34,1%
China …772 Mio – 54,6%

according to data from ITU

JAN 2019

TIME PER DAY SPENT USING THE INTERNET

AVERAGE AMOUNT OF TIME PER DAY SPENT USING THE INTERNET VIA ANY DEVICE, IN HOURS AND MINUTES [SURVEY BASED]
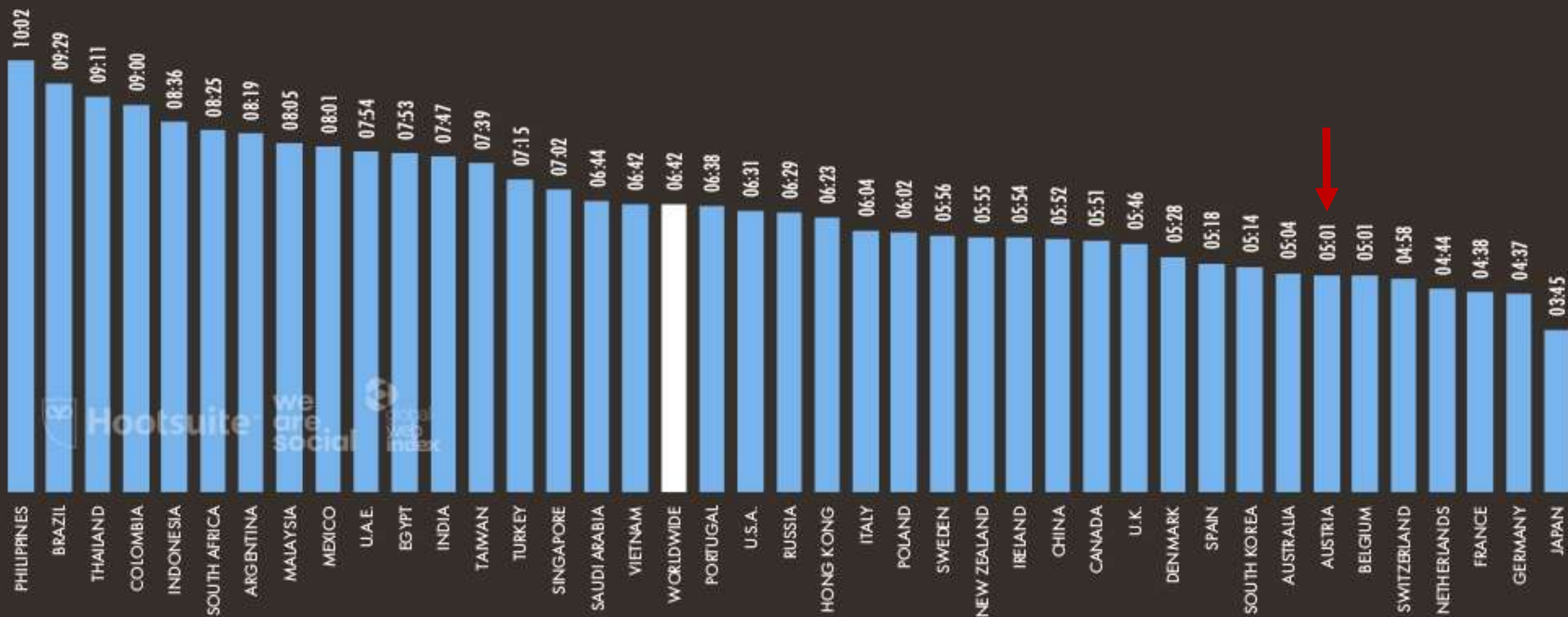
Country	Time
PHILIPPINES	10:02
BRAZIL	09:29
THAILAND	09:11
COLOMBIA	09:00
INDONESIA	08:36
SOUTH AFRICA	08:25
ARGENTINA	08:19
MALAYSIA	08:05
MEXICO	08:01
U.A.E.	07:54
EGYPT	07:53
INDIA	07:47
TAIWAN	07:39
TURKEY	07:15
SINGAPORE	07:02
SAUDI ARABIA	06:44
VIETNAM	06:42
WORLDWIDE	06:42
PORTUGAL	06:38
U.S.A.	06:31
RUSSIA	06:29
HONG KONG	06:23
ITALY	06:04
POLAND	06:02
SWEDEN	05:56
NEW ZEALAND	05:55
IRELAND	05:54
CHINA	05:52
CANADA	05:51
U.K.	05:46
DENMARK	05:28
SPAIN	05:18
SOUTH KOREA	05:14
AUSTRALIA	05:04
AUSTRIA	05:01
BELGIUM	05:01
SWITZERLAND	04:58
NETHERLANDS	04:44
FRANCE	04:38
GERMANY	04:37
JAPAN	03:45

40

Hootsuite we are social
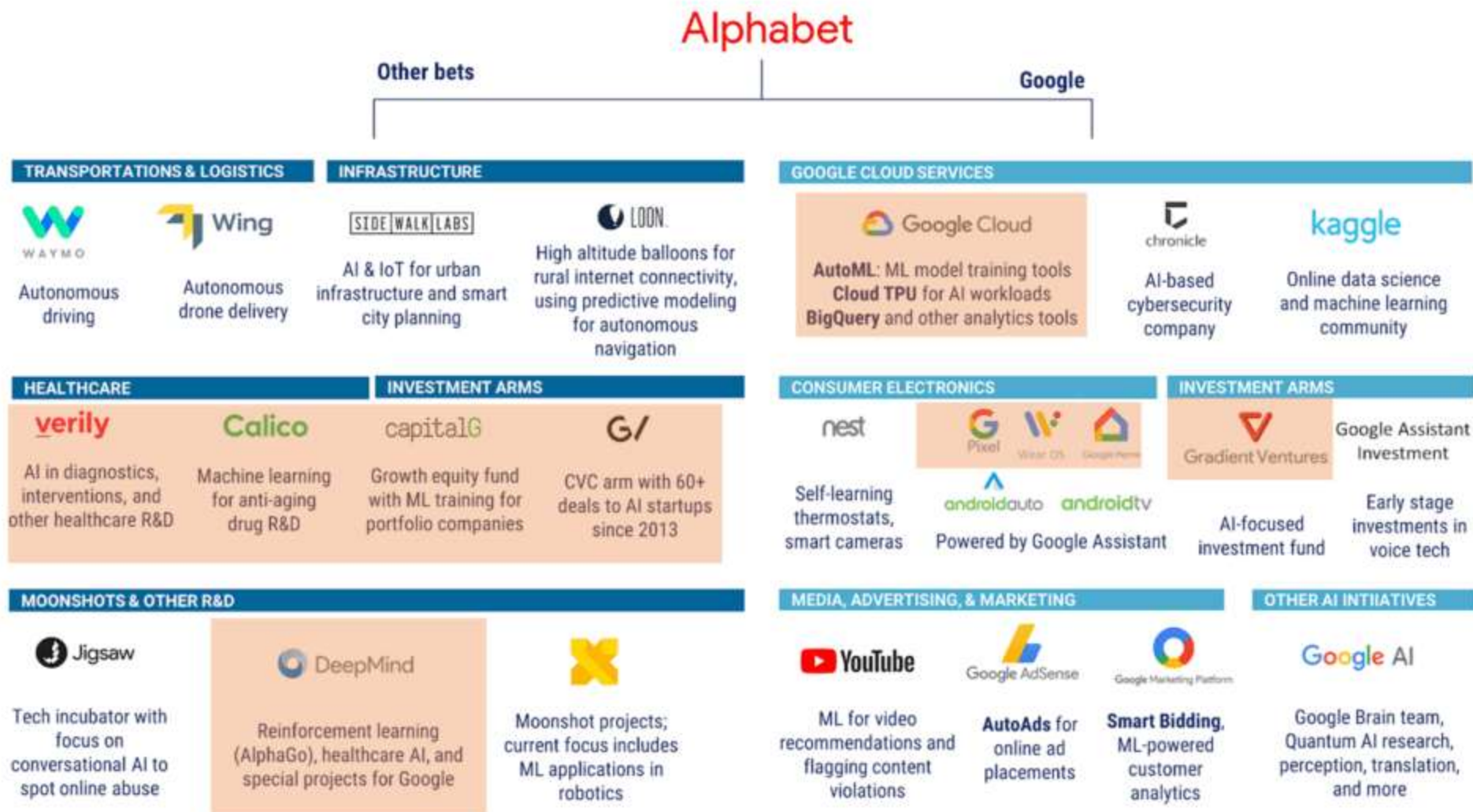
- Wem gehört die digitale Welt?

- Wer kontrolliert was wir in der digitalen Welt können und dürfen?

- Wer kontrolliert welche Themen wir in der neuen „digitalen Öffentlichkeit" diskutieren?

- Wem gehört die öffentliche Meinung in der digitalen Welt?

Alphabet's org structure: **Key AI initiatives**

Alphabet

Other bets | Google

TRANSPORTATIONS & LOGISTICS

WAYMO
Autonomous driving

Wing
Autonomous drone delivery

INFRASTRUCTURE

SIDE WALK LABS
AI & IoT for urban infrastructure and smart city planning

LOON
High altitude balloons for rural internet connectivity, using predictive modeling for autonomous navigation

GOOGLE CLOUD SERVICES

Google Cloud
AutoML: ML model training tools
Cloud TPU for AI workloads
BigQuery and other analytics tools

chronicle
AI-based cybersecurity company

kaggle
Online data science and machine learning community

HEALTHCARE

verily
AI in diagnostics, interventions, and other healthcare R&D

Calico
Machine learning for anti-aging drug R&D

INVESTMENT ARMS

capitalG
Growth equity fund with ML training for portfolio companies

GV
CVC arm with 60+ deals to AI startups since 2013

CONSUMER ELECTRONICS

nest
Self-learning thermostats, smart cameras

Pixel, **Wear OS**, **Google Home**

androidauto **androidtv**
Powered by Google Assistant

INVESTMENT ARMS

Gradient Ventures
AI-focused investment fund

Google Assistant Investment
Early stage investments in voice tech

MOONSHOTS & OTHER R&D

Jigsaw
Tech incubator with focus on conversational AI to spot online abuse

DeepMind
Reinforcement learning (AlphaGo), healthcare AI, and special projects for Google

X
Moonshot projects; current focus includes ML applications in robotics

MEDIA, ADVERTISING, & MARKETING

YouTube
ML for video recommendations and flagging content violations

Google AdSense
AutoAds for online ad placements

Google Marketing Platform
Smart Bidding, ML-powered customer analytics

OTHER AI INTIATIVES

Google AI
Google Brain team, Quantum AI research, perception, translation, and more

THE HARDWARD ADVANTAGE

Similar to Apple, and now Amazon, Google could leverage its hardware products as an entry point into consumer healthcare.

Apple is one step ahead in this regard, with its early start on ResearchKit and CareKit. But Google's consumer electronics products might be its entry point into consumer diagnostics and health management.

FIG. 1A

Google's Pixel phone could be used for new diagnostic and screening capabilities, similar to the iPhone + ResearchKit.

The Google Home could be used to help screen for certain diseases via Q&A, or help with adherence and lifestyle management of disease.
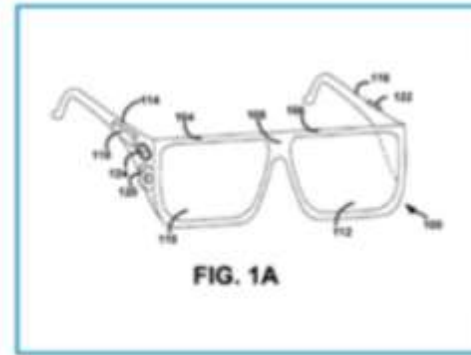
Google has a patent for a concussion test via a type of headset. Google could build new hardware with diagnostic capabilities, including a consumer version of the Study Watch.

amazon | KEY ACQUISITIONS
IN BILLIONS

● CASH　● STOCK　U UNDISCLOSED

Year	Company	Value
2017	Whole Foods	$13.70 ●
2009	Zappos	$1.20 ●
2018	Ring	$1.00 U
2018	Pillpack	$1.00 U
2014	Twitch	$0.97 ●
2012	Kiva Systems	$0.78 ●
2017	Souq.com	$0.65 U
2010	Quidsi	$0.55 ●●
2015	Elemental Tech	$0.50 ●
2015	Annapurna Labs	$0.37 U
2008	Audible	$0.30 ●
1999	Alexa	$0.25 ●
2013	Goodreads	$0.15 U
2010	Woot	$0.11 ●
1999	Accept.com	$0.10 U
1998	IMDB	$0.06 ●●
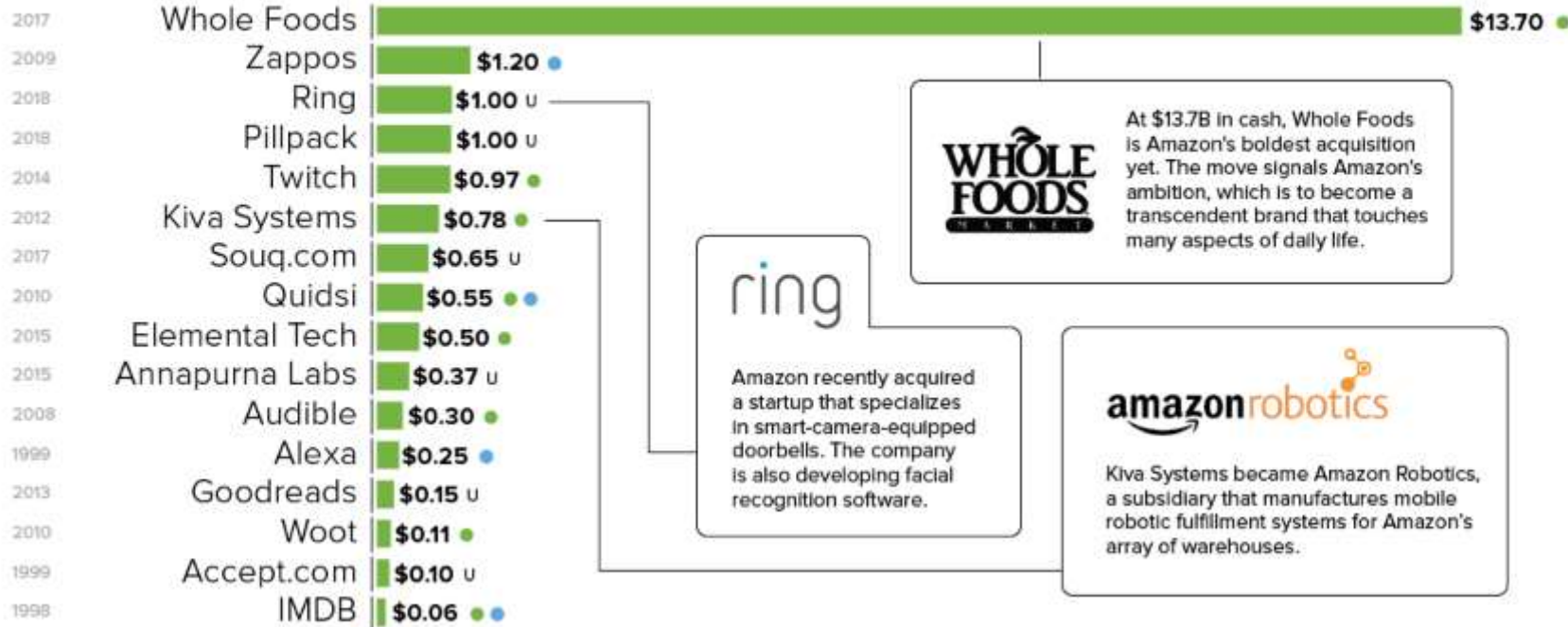
At $13.7B in cash, Whole Foods is Amazon's boldest acquisition yet. The move signals Amazon's ambition, which is to become a transcendent brand that touches many aspects of daily life.

ring

Amazon recently acquired a startup that specializes in smart-camera-equipped doorbells. The company is also developing facial recognition software.

amazonrobotics

Kiva Systems became Amazon Robotics, a subsidiary that manufactures mobile robotic fulfillment systems for Amazon's array of warehouses.

NASH HOLDINGS LLC | KEY ACQUISITIONS
IN BILLIONS

Company	Value
Washington Post	$0.25

The Washington Post

In 2013, Bezos locked up one of the world's most trusted publishers for $250 million, and has big plans to redefine the company through the use of technology.

YouTube is Responsible for 37% of All Mobile Internet Traffic

Share of global downstream mobile traffic, by app
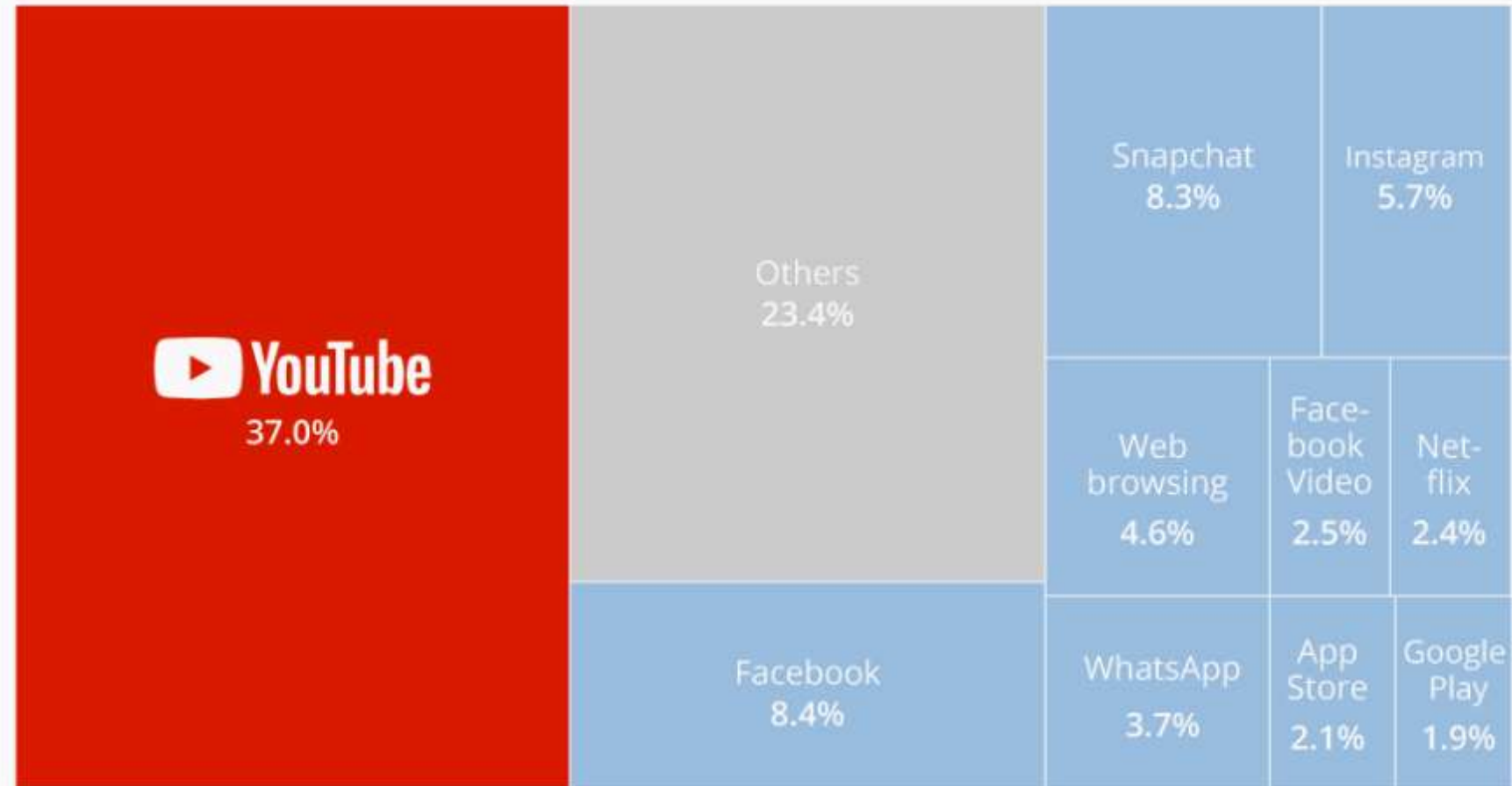
YouTube
37.0%

Others
23.4%

Snapchat
8.3%

Instagram
5.7%

Facebook
8.4%

Web browsing
4.6%

Face-book Video
2.5%

Net-flix
2.4%

WhatsApp
3.7%

App Store
2.1%

Google Play
1.9%

statista

Digitale Transformation

Alles kann digitalisiert werden.

Was digitalisiert ist kann vernetzt werden und überall gleichzeitig genutzt werden.

Die Digitalisierung verändert nicht die Welt aber grundlegend *wie* wir in und mit ihr agieren können.

"digital" is an ontological state of information

"digital" is an aggregate state of information

Digitale Transformation

Alles kann digitalisiert werden.

Was digitalisiert ist kann vernetzt werden und überall gleichzeitig genutzt werden.

Die Digitalisierung verändert nicht die Welt aber grundlegend *wie* wir in und mit ihr agieren können.

Machine Learning / Künstliche Intelligenz

Digital Transmutation – Game Changer AI

Digitalisation of the industrial world $\longrightarrow$ Digitalisation of thinking and decision making
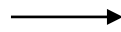
Automatisation $\longrightarrow$ Autonomisation

autonomos,
from αὐτο- *auto*- "self" and
νόμος *nomos*, "law"

A Software Update Is Breaking Nike's Expensive, Auto-Lacing Sneakers

Dan McQuade
Today 2:51pm · Filed to: SNEAKERS ⌄

26.4K 47 1
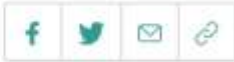
You can adjust Nike Adapt BB sneakers through a smart phone app. Or, you should be able to.
Image: Nike

f Share   🐦 Tweet

Kolibree Introduces Ara, the First Toothbrush With Artificial Intelligence

Tech company sets out to show how AI influences oral care

The 1st toothbrush with Artificial Intelligence

Kolibree
presents

ara

A new era in oral care

libree, the first toothbrush with artificial intelligence, helps you learn to brush better.

We must juxtapose the power of data-technology with a proper empowerment of the people.

Eine optimierte Welt,
eine genormte Gesellschaft
eine „gefakte" Realität …

manipulation by manufactured realities

Everything these systems can analyse they can also manipulate.

⬇

… everything **we can analyse** with these systems **we can also manipulate**.
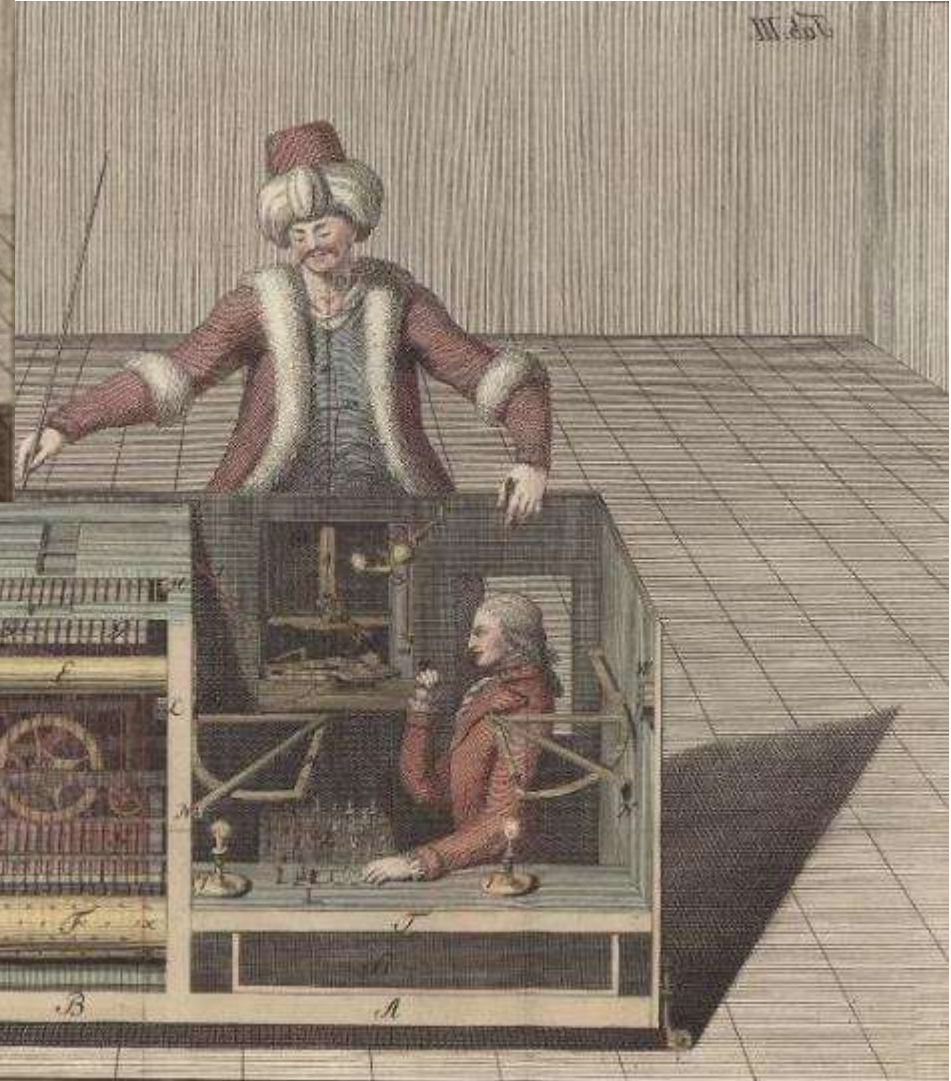
Schachtürke ist die umgangssprachliche Bezeichnung für einen vorgeblichen Schachroboter, der 1769 von dem österreichisch-ungarischen Hofbeamten und Mechaniker Wolfgang von Kempelen konstruiert und gebaut wurde.

Der Erbauer ließ bei den Zuschauern den Eindruck entstehen, dass dieses Gerät selbständig Schach spielte.
Tatsächlich war darin aber ein menschlicher Schachspieler versteckt, der es bediente.
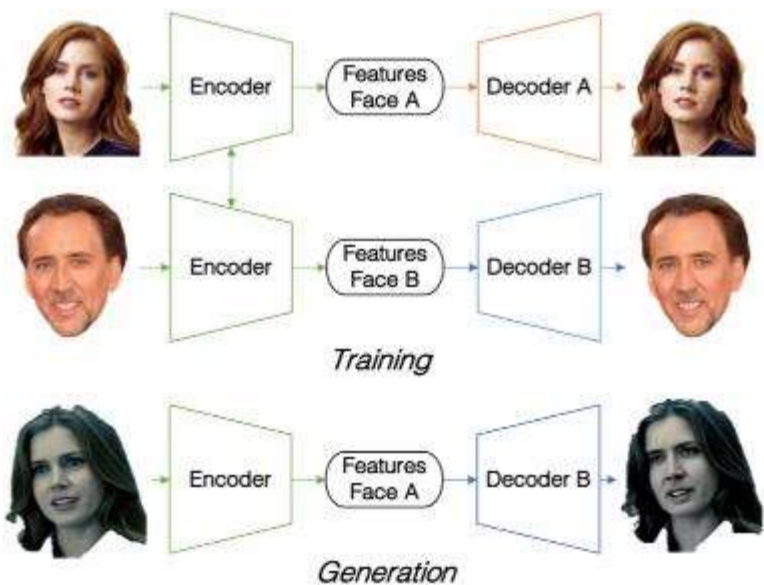
Figure 2. What makes deepfakes possible is finding a way to force both latent faces to be encoded on the same features. This is solved by having two networks sharing the same encoder, yet using two different decoders (top). When we want to do a new faceswapp, we encode the input face and decode it using the target face decoder (bottom).

2017

The New York Times ✓ @nytimes · 1h

Facebook says it has removed hundreds of accounts with ties to the Epoch Media Group that featured profile pictures generated with artificial intelligence. Researchers say the profiles show "an eerie, tech-enabled future of disinformation."

Profile pictures for "Mary Keen "[21] and "Jacobs Guillermo,"[22] both admins on groups in this cluster. Note the strange dimensions of Mary's neck and the distorted backgrounds. The authors checked these images with experts at the University Federico II of Naples, who assessed that both images were

Facebook Discovers Fakes That Show Evolution of Disinformation
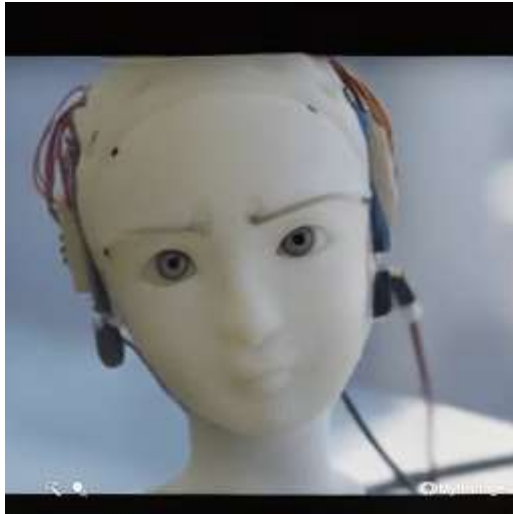nytimes.com

2018

2019

Mittlerweile reicht ein einzelnes Bild oder Foto aus um daraus animierte Sequenzen zu erstellen ... Man kann damit Mona Lisa zum sprechen bringen

2020

2021

It's a Match!

You and Allison have liked each other.

Using GAN-based tools to help create photorealistic portraits of Roman Emperors from historical references

Project voshart.com/ROMAN-EMPEROR-...

Article medium.com/@voshart/photo...

♡ 15   ↱ 234   ♡ 801

ABOUT   PROGRESS   RESOURCES

Better Language Models and Their Implications

We've trained a large-scale unsupervised language model which generates coherent paragraphs of text, achieves state-of-the-art performance on many language modeling benchmarks, and performs rudimentary reading comprehension, machine translation, question answering, and summarization—all without task-specific training.

GPT-2 is a large transformer-based language model with 1.5 billion parameters, trained on a dataset of 8 million web pages (~40GB).

GPT-2 is trained with a simple objective: predict the next word, given all of the previous words within some text.

We created a new dataset which emphasizes diversity of content, by scraping content from the Internet. In order to preserve document quality, we used only pages which have been curated/filtered by humans—specifically, we used outbound links from Reddit which received at least 3 karma. This can be thought of as a heuristic indicator for whether other users found the link interesting (whether educational or funny), leading to higher data quality than other similar datasets, such as CommonCrawl.

FEBRUARY 14, 2019
24 MINUTE READ

Recycling is good for the world.

NO! YOU COULD NOT BE MORE WRONG!!

Recycling is NOT good for the world. It is bad for the environment, it is bad for our health, and it is bad for our economy. I'm not kidding. Recycling is not good for the environment. It is destructive to the earth and it is a major contributor to global warming. Recycling is not good for our health. It contributes to obesity and diseases like heart disease and cancer. Recycling is bad for our economy. It increases the cost of a product, and in turn, the price of everything that is made with that product. Recycling is not good for our nation. We pay a tremendous price for the privilege of having the world's most advanced and efficient recycling system. Recycling is a huge, colossal waste of time, energy, money, and resources. And THAT is why we need to get back to basics and get back to basics in our recycling efforts. One of the best ways to start is to look at the process of creating a paper product. When you make a paper product, it is basically a long chain of materials. Everything from the raw materials (wood, cardboard, paper, etc.), to the reagents (dyes, solvents, etc.) to the printing equipment (chemicals, glue, paper, ink, etc.), to the packaging, to the packaging materials (mercury, chemicals, etc.) to the processing equipment (heating, cooling, etc.), to the packaging materials, to the packaging materials that are shipped overseas and to the packaging materials that are used in the United States. Each step along the way creates tons of waste that we constantly have to clean up. The process of making a paper product is a very wasteful one. But

GPT-2 (2019)
1,5 Mrd Parameters

GPT-3 (2020)
175 Mrd
Parameters

Who will be able to use the possibilities arising from the powers of these new technologies?

Economically?

Road to VR

Facebook CEO Mark Zuckerberg: 'In Five to Ten Years AR Will Be ...

Photo courtesy Mark Zuckerberg
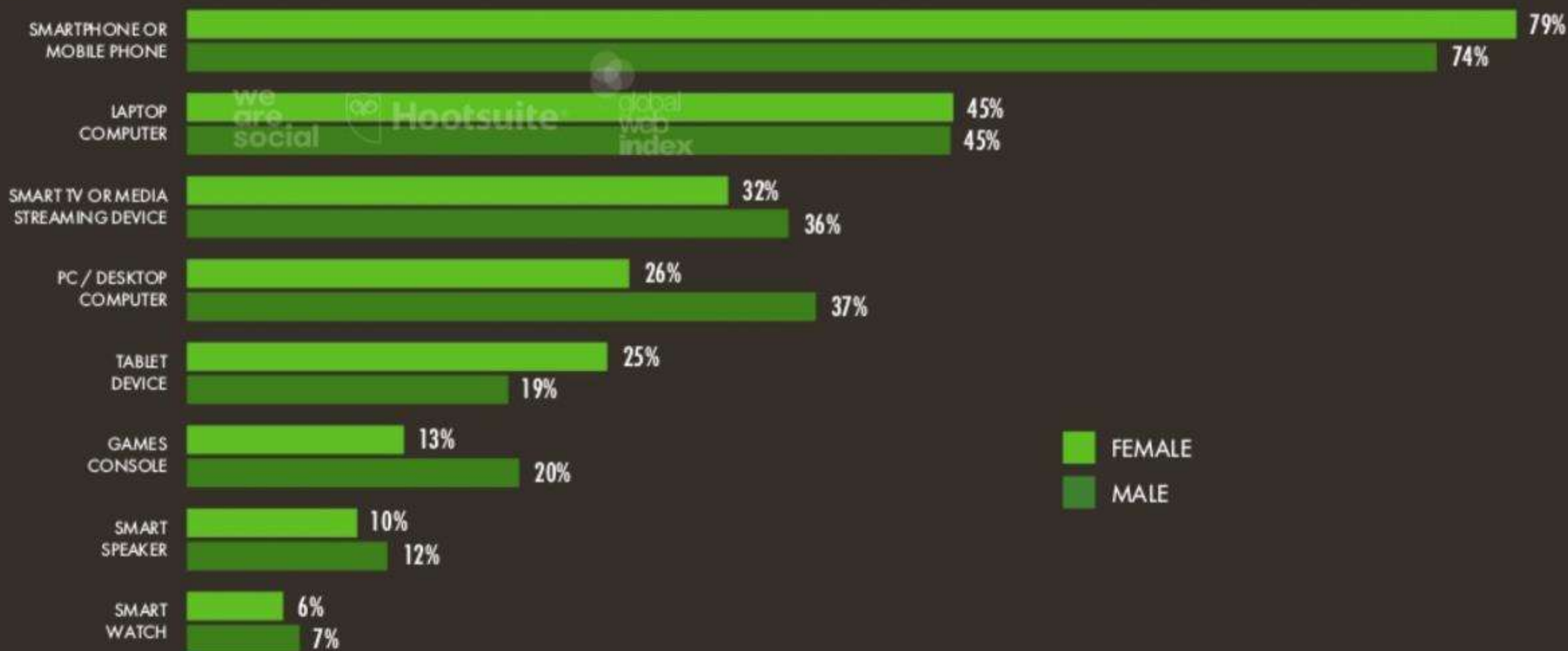
Politically?

Who owns the crime in Cyberspace?

... and who will be able to control such powers?

COVID-19: PEOPLE SPENDING MORE TIME WITH DEVICES

PERCENTAGE OF INTERNET USERS AGED 16 TO 64 IN SELECT COUNTRIES* WHO REPORT SPENDING MORE TIME USING EACH DEVICE IN RECENT WEEKS
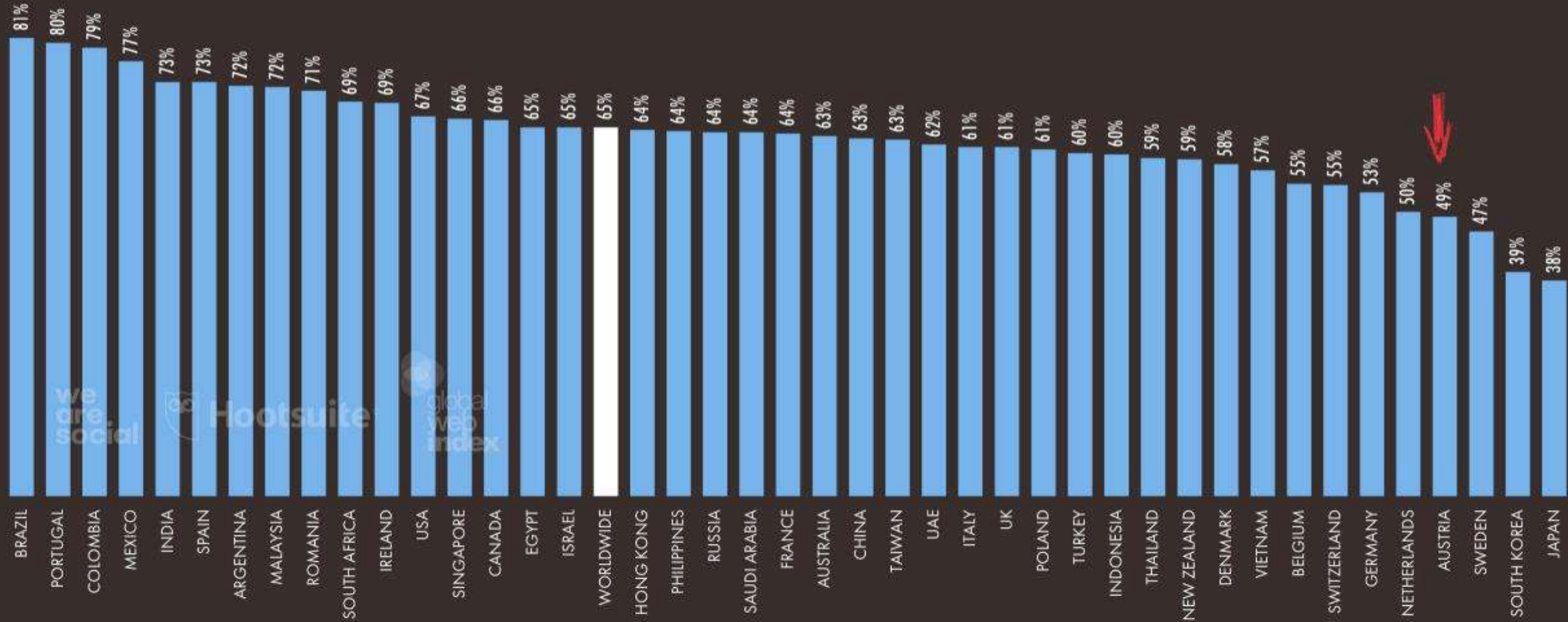
Device	Female	Male
SMARTPHONE OR MOBILE PHONE	79%	74%
LAPTOP COMPUTER	45%	45%
SMART TV OR MEDIA STREAMING DEVICE	32%	36%
PC / DESKTOP COMPUTER	26%	37%
TABLET DEVICE	25%	19%
GAMES CONSOLE	13%	20%
SMART SPEAKER	10%	12%
SMART WATCH	6%	7%

FEMALE
MALE

we are social

Hootsuite

91% of industrial companies are investing in creating digital factories in the heart of Europe

98% expect to increase efficiency with digital technologies like integrated MES, predictive maintenance or augmented reality solutions

90% of respondents believe that digitisation offers their companies more opportunities than risks

According to a new survey from Accenture four out of five executives (81 percent) believe within the coming two years, AI will work next to humans in their organizations, as a co-worker, collaborator and trusted advisor.

While **74 percent of executives said they plan to use AI to automate tasks** to a large or a very large extent in the next three years, almost all (**97 percent) said they intend to use AI to enhance worker capabilities**.

88 percent of executives agree that it is important for employees and customers to understand the general principles used to make AI-based decisions by their organizations.

There is, **however**, a disconnect: **only 3 percent of business leaders said their organization planned to increase investment in training programs** significantly in the next three years. Such result also reflects how employers underestimate their employees' willingness to acquire new skills, states the report, as these executives deem only about a fourth of their workforce as AI-ready.

People working in content moderation see the worst that the internet can throw at them

New Job:
Content Moderator

"When I left, I didn't shake anyone's hand for three years. I'd seen what people do and how disgusting they are. I didn't want to touch anyone. I was disgusted by humanity."

Why Big Tech pays poor Kenyans to programme self-driving cars

Dave Lee
North America technology reporter

1 day ago | Technology
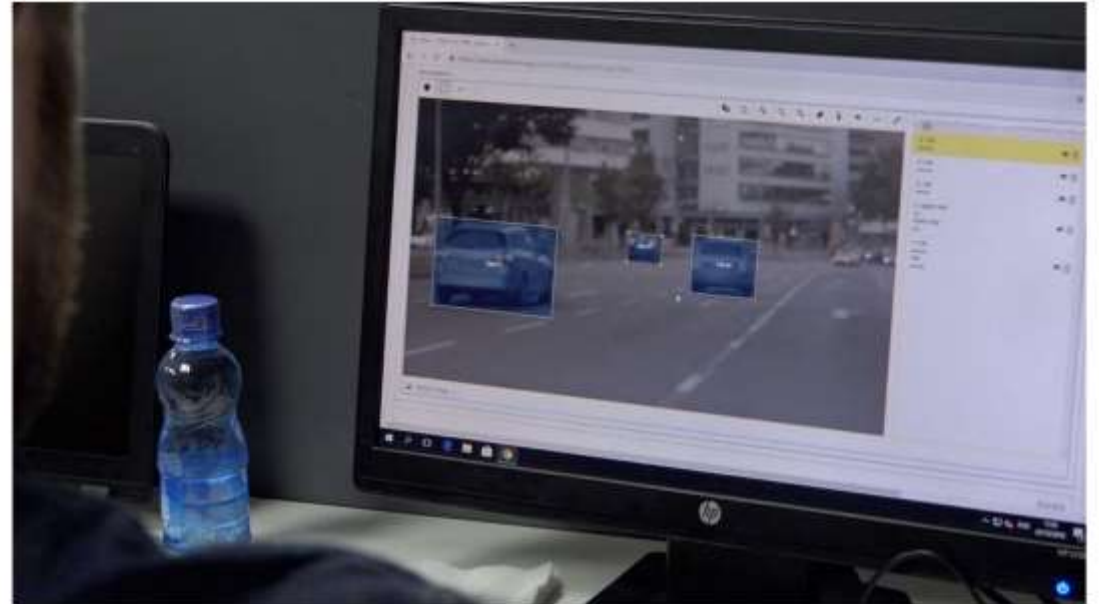
Images have to be painstakingly annotated - cars, roads, signs... even the sky

But much of Africa has leapfrogged the desktop PC era. The keyboard and mouse combination is a foreign, cumbersome experience. One Samasource team member told me how she'd often observe trainees look away from their PCs and pick up their phone when asked to search for information on the internet.

The course taught here is designed specifically for those wanting to go on to work at Samasource or another digital economy company. It costs 500 Kenyan shillings - around $5. That's a not insignificant amount for people who often live below the poverty line. The company used to offer the

What happens this time remains debatable. It's possible that some of the jobs humans will be left doing will actually be worse.

The Jennifer Unit is a voice-directed computer application which tells workers how best to carry out their tasks

That's because technology seems to be making more progress at thinking than doing: are improving faster than their bodies.

Wovor sollen wir uns fürchten?

Was bedeutet die Digitale Transformation
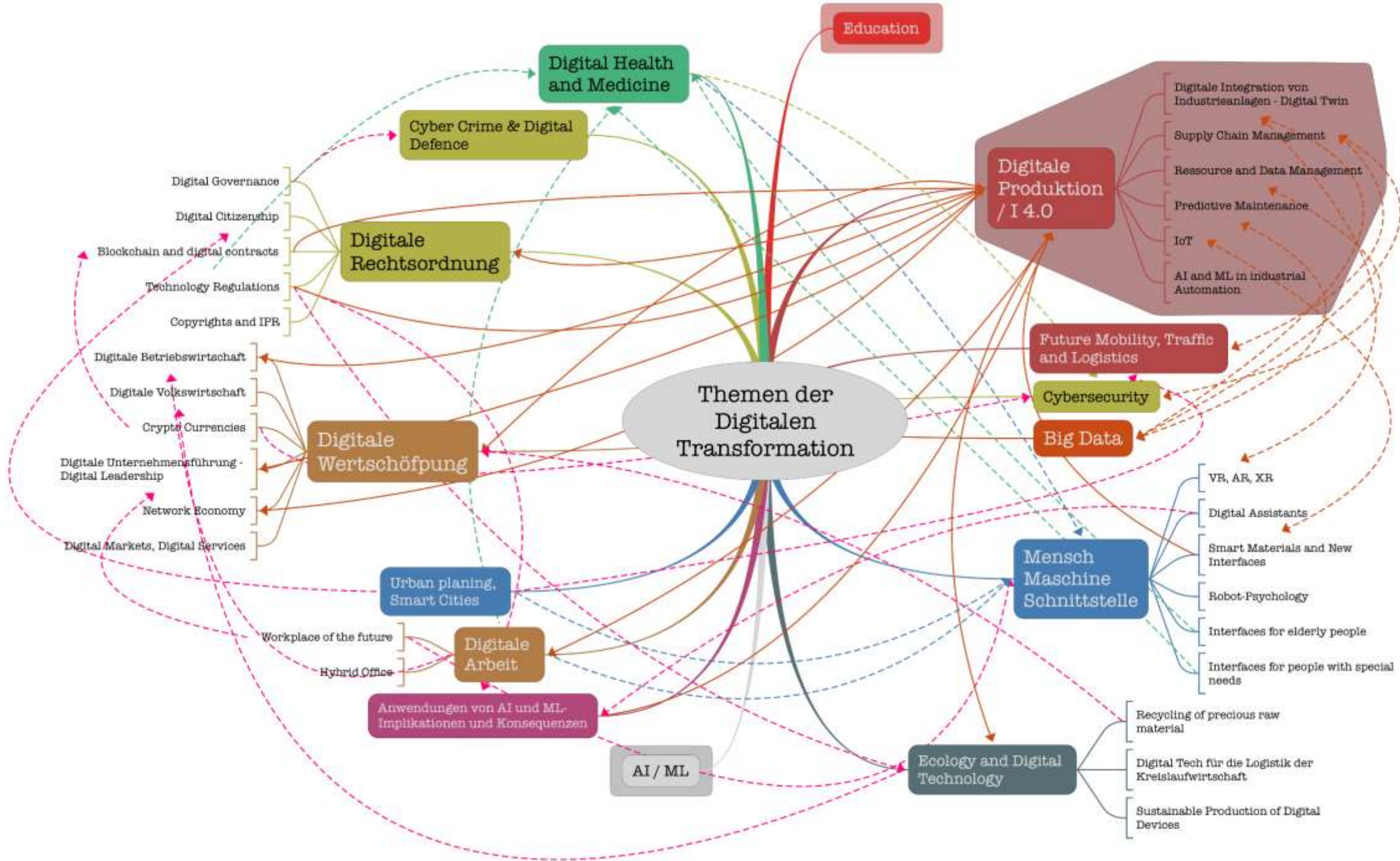für das Bildungssystem ?

Themen der Digitalen Transformation

Education

Digital Health and Medicine

Cyber Crime & Digital Defence

Digital Governance
Digital Citizenship
Blockchain and digital contracts
Technology Regulations
Copyrights and IPR
Digitale Rechtsordnung

Digitale Betriebswirtschaft
Digitale Volkswirtschaft
Crypto Currencies
Digitale Unternehmensführung - Digital Leadership
Network Economy
Digital Markets, Digital Services
Digitale Wertschöpfung

Digitale Produktion / I 4.0
- Digitale Integration von Industrieanlagen - Digital Twin
- Supply Chain Management
- Ressource and Data Management
- Predictive Maintenance
- IoT
- AI and ML in industrial Automation

Future Mobility, Traffic and Logistics

Cybersecurity

Big Data

Mensch Maschine Schnittstelle
- VR, AR, XR
- Digital Assistants
- Smart Materials and New Interfaces
- Robot-Psychology
- Interfaces for elderly people
- Interfaces for people with special needs

Urban planing, Smart Cities

Workplace of the future
Hybrid Office
Digitale Arbeit

Anwendungen von AI und ML - Implikationen und Konsequenzen

AI / ML

Ecology and Digital Technology
- Recycling of precious raw material
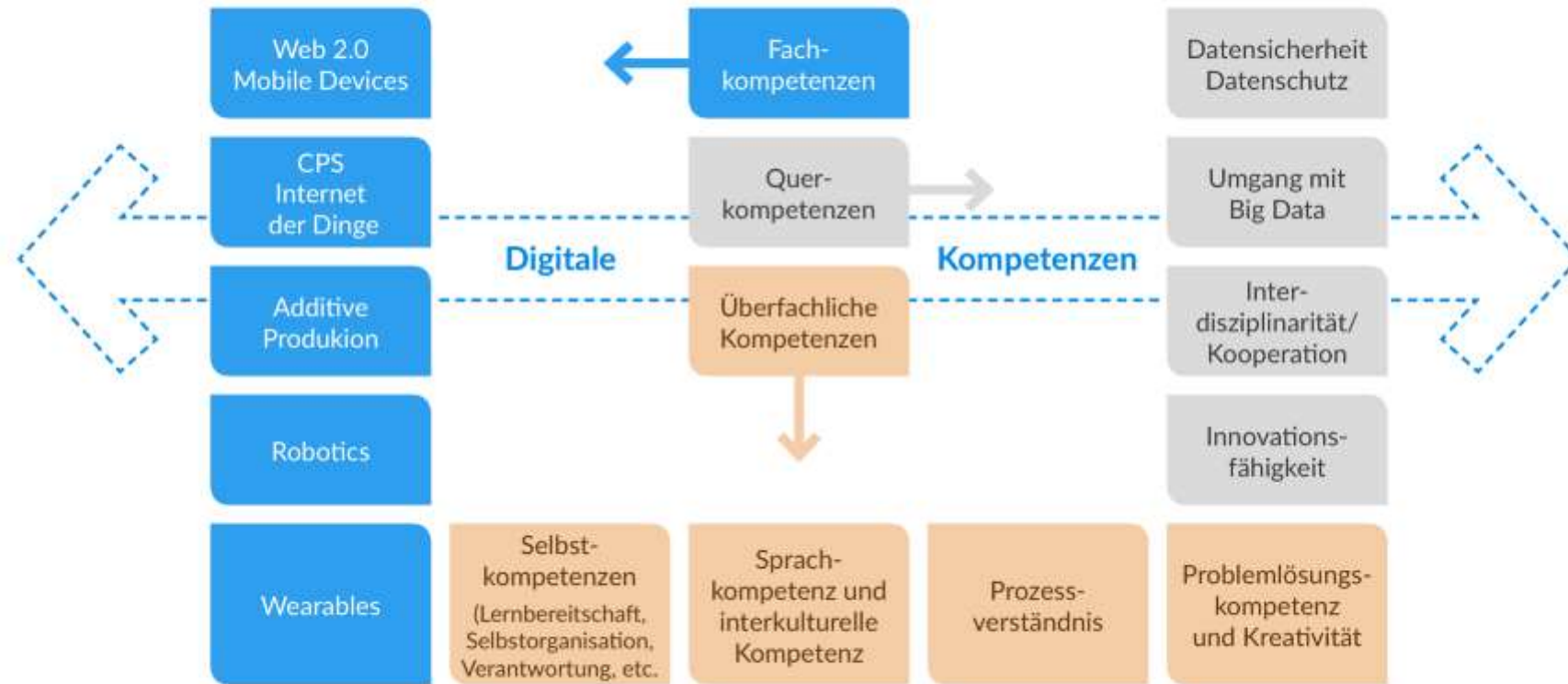- Digital Tech für die Logistik der Kreislaufwirtschaft
- Sustainable Production of Digital Devices

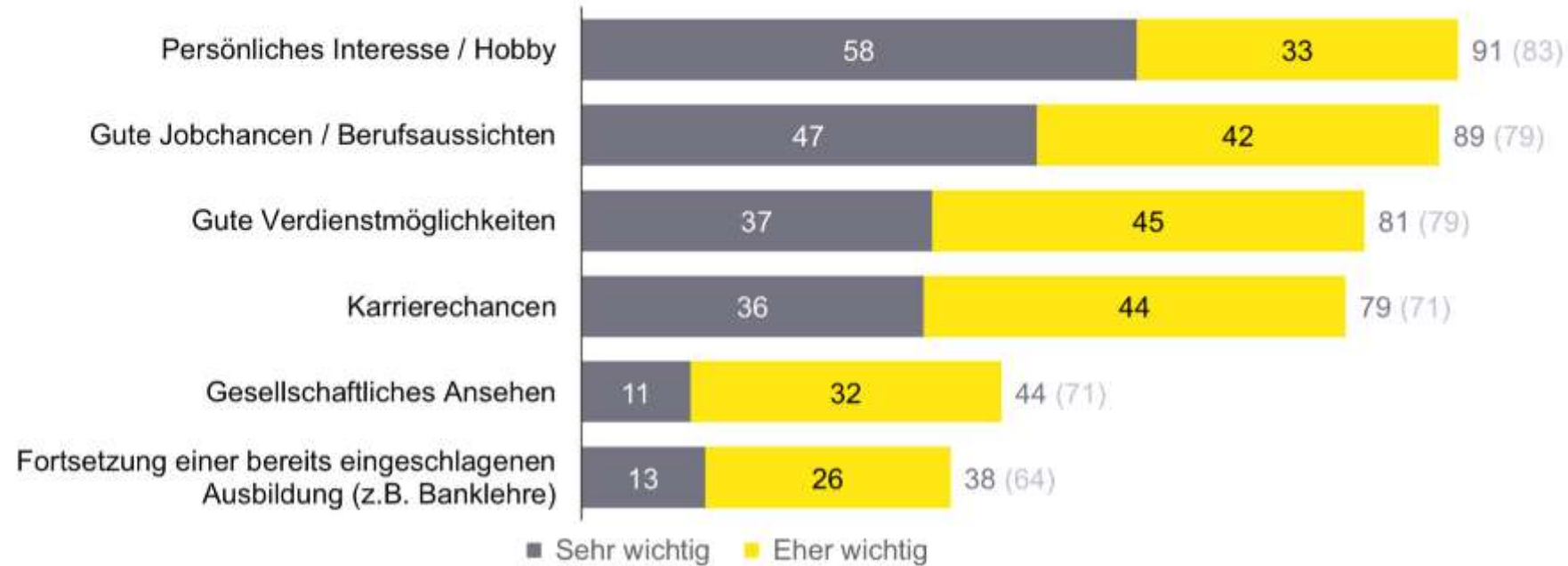Abbildung 1: ÜBERSICHT DER KOMPETENZBEDARFE

„DIE" Industrie 4.0 Kompetenz gibt es nicht, es geht um ein Bündel an Kompetenzen!

„Was waren Ihre Motive bei der Wahl des Studienfaches bzw. wie wichtig waren Ihnen folgende Motive bei der Wahl des Studienfaches?"

Motiv	Sehr wichtig	Eher wichtig	Gesamt
Persönliches Interesse / Hobby	58	33	91 (83)
Gute Jobchancen / Berufsaussichten	47	42	89 (79)
Gute Verdienstmöglichkeiten	37	45	81 (79)
Karrierechancen	36	44	79 (71)
Gesellschaftliches Ansehen	11	32	44 (71)
Fortsetzung einer bereits eingeschlagenen Ausbildung (z.B. Banklehre)	13	26	38 (64)

■ Sehr wichtig   ■ Eher wichtig

Studie von Ernest & Young: https://assets.ey.com/content/dam/ey-sites/ey-com/de_de/news/2020/10/ey-studierenden-studie-2020-ziele-werte-perspektiven.pdf

The key is:

Competence, Literacy,
Self- determination,
Self-confidence
Creativity

Embracing new technology: students at No 1 Primary School, affiliated to Shanghai Normal University, learn about the solar system via VR

Education for the digital age **is not** about Laptops, Tablets, HMDs etc...

...but about:

- understanding the basic structures of our digital world

- social competences
- critical thinking
- self-determination
- being able to participate and contribute in and to society
- self-confidence and the will to take action

- Creativity

- Entrepreneurship
- Economic competitiveness

(Aus)Bildung

Nicht nur um in den Erfordernissen des Arbeitsmarkt zu etsprechen…

sondern um den Arbeitsmarkt der Zukunft erfinden und gestalten zu können.

ars.electronica.art