

# A Digital World

Prof. Fabio Ciravegna

Dipartimento di Informatica

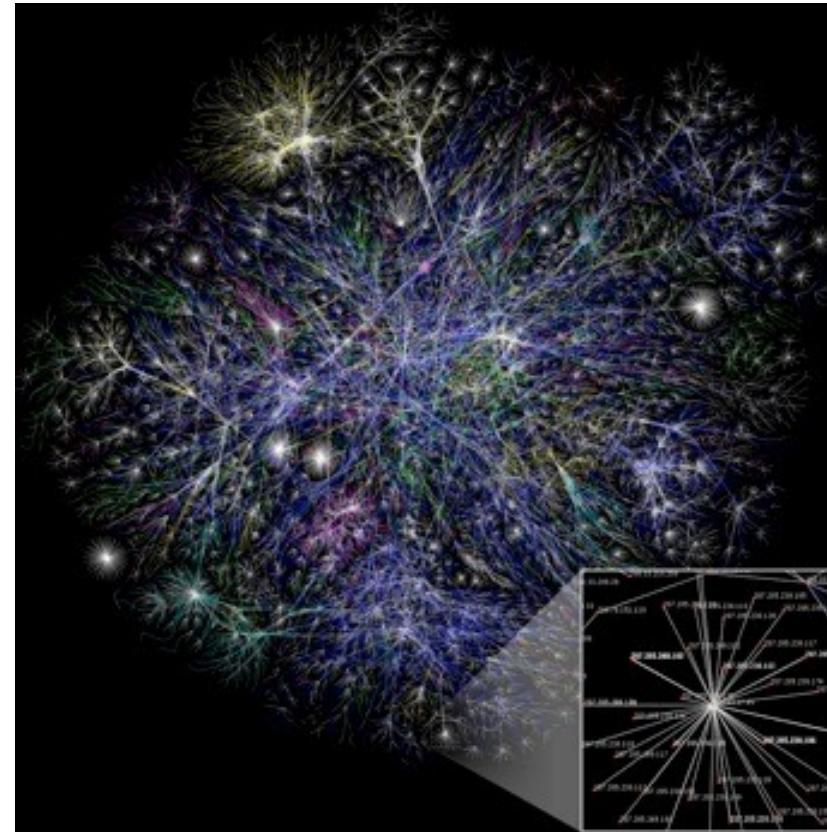
Università di Torino

[fabio.ciravegna@unito.it](mailto:fabio.ciravegna@unito.it)



# Internet

- a world-wide collection of heterogeneous computers interconnected



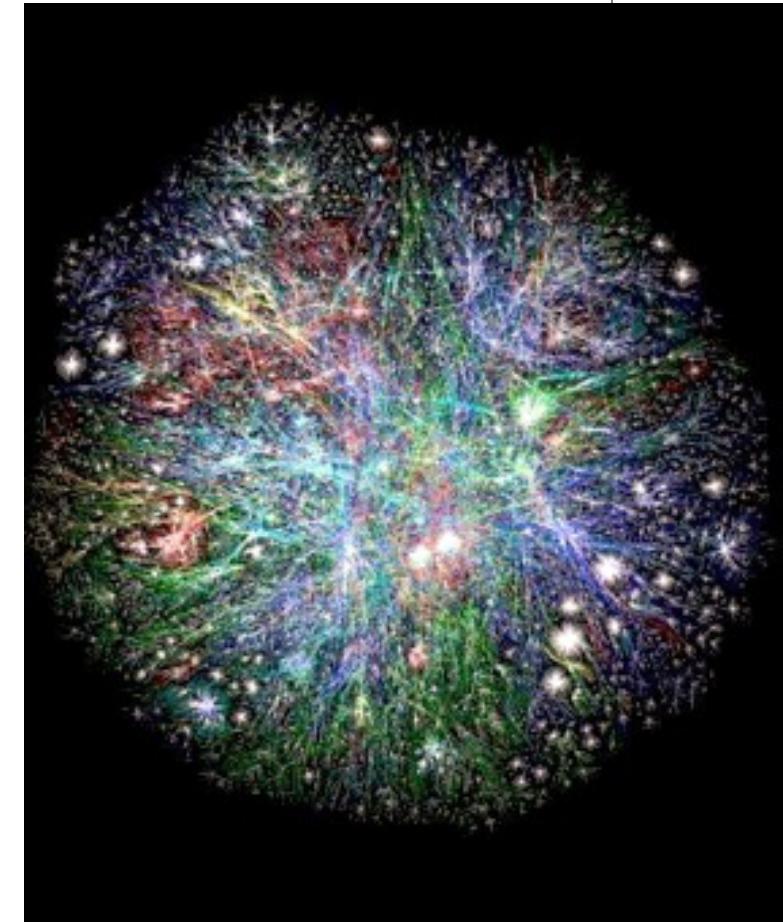
Matt Britt

A small partial map of the [Internet](#)

Source: Wikipedia

# The World Wide Web

- The Web is a way of accessing information over the internet
- It is an information-sharing model based on the HTTP protocol
- HTTP is one of the protocols used to transmit data over the internet



**3D Map of the World Wide Web**

The most popular image of the WWW according to Google

[www.vlib.us](http://www.vlib.us)

# Moore's, Nielsen's and Disk Space Law

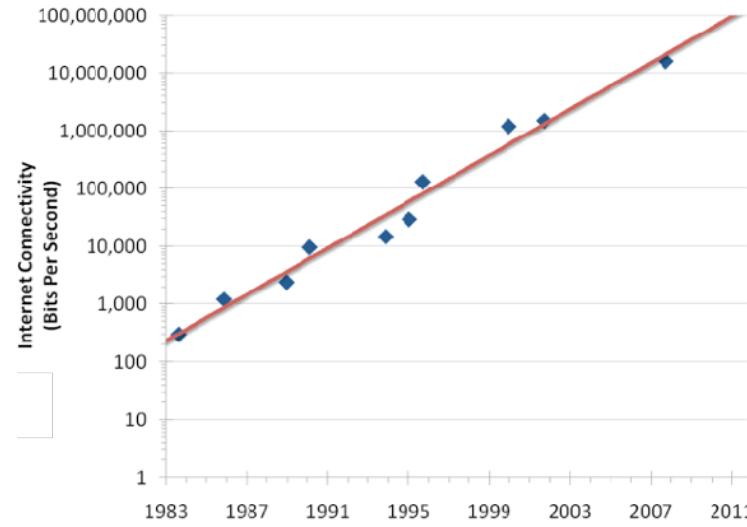
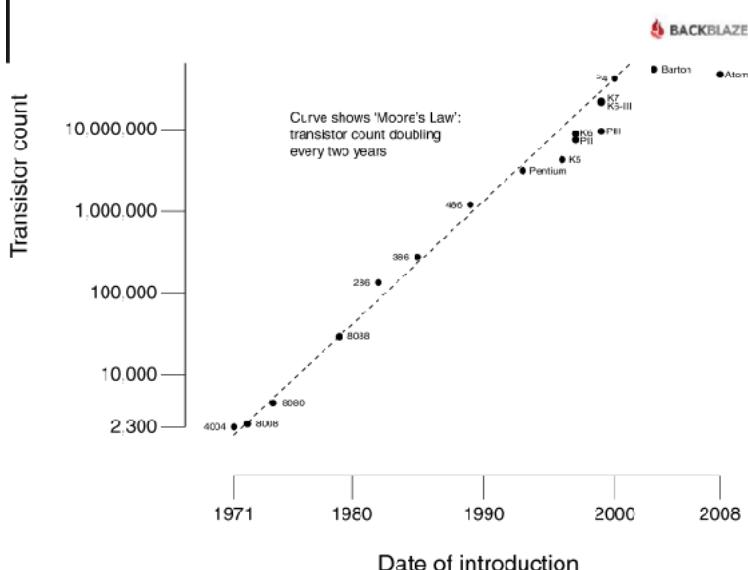
Backblaze Average Cost per GB for Hard Drives

By Quarter: Q1 2009 - Q2 2017



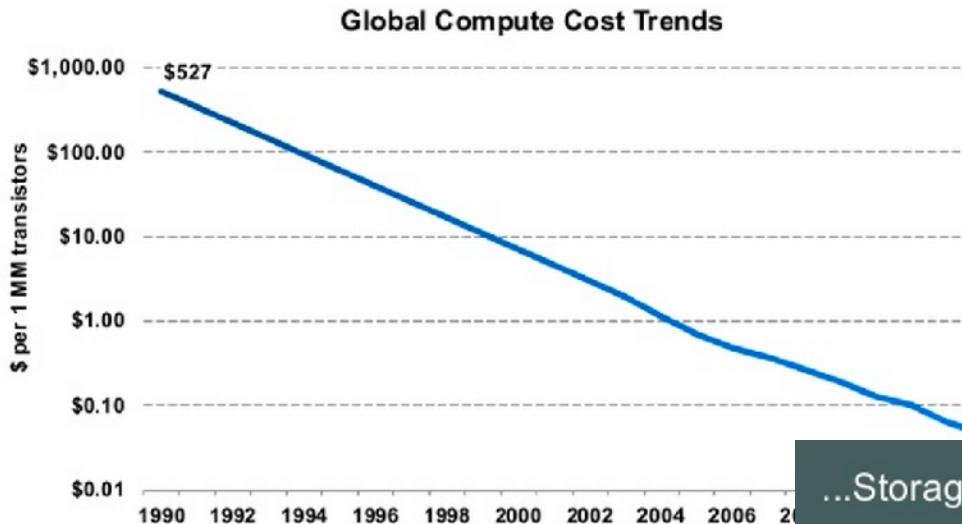
Computer power, speed of broadband and disk storage capability double every year (same cost)

The same computer power, speed of broadband and disk storage capability will cost half the current price in 2 years' time



## Compute Costs Declining = 33% Annually, 1990-2013...

*Decreasing cost / performance curve enables computational power @ core of digital infrastructure...*



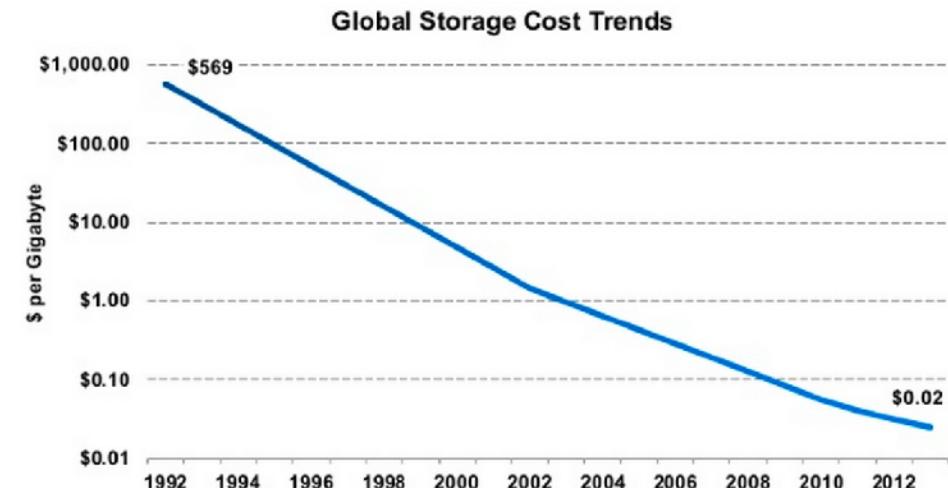
<http://www.kpcb.com/internet-trends>

...Storage Costs Declining = 38% Annually, 1992-2013...

@KPCB

Note: Y-axis on graph is logarithmic scale.  
Source: John Hagel, Deloitte, 5/14.

*Decreasing cost / performance of digital storage enables creation of more / richer digital information...*



# Then by applying linearly these laws

	2023	2028	2033	2038
<b>Networks</b>	500M	3G	16G	96G
<b>Computers</b>	£600	£3,600	£19,200	£115,200*
<b>Disks</b>	1T	6T	32T	192T

\* The equivalent to 192 computers

You do not believe it?

# 50+ years ago and today



Source: <https://www.slideshare.net/sqrajper/mobile-computing-24722802>

# Technology Cycles – Still Early Cycle on Smartphones + Tablets, Now Wearables Coming on Strong, Faster than Typical 10-Year Cycle

## Technology Cycles Have Tended to Last Ten Years

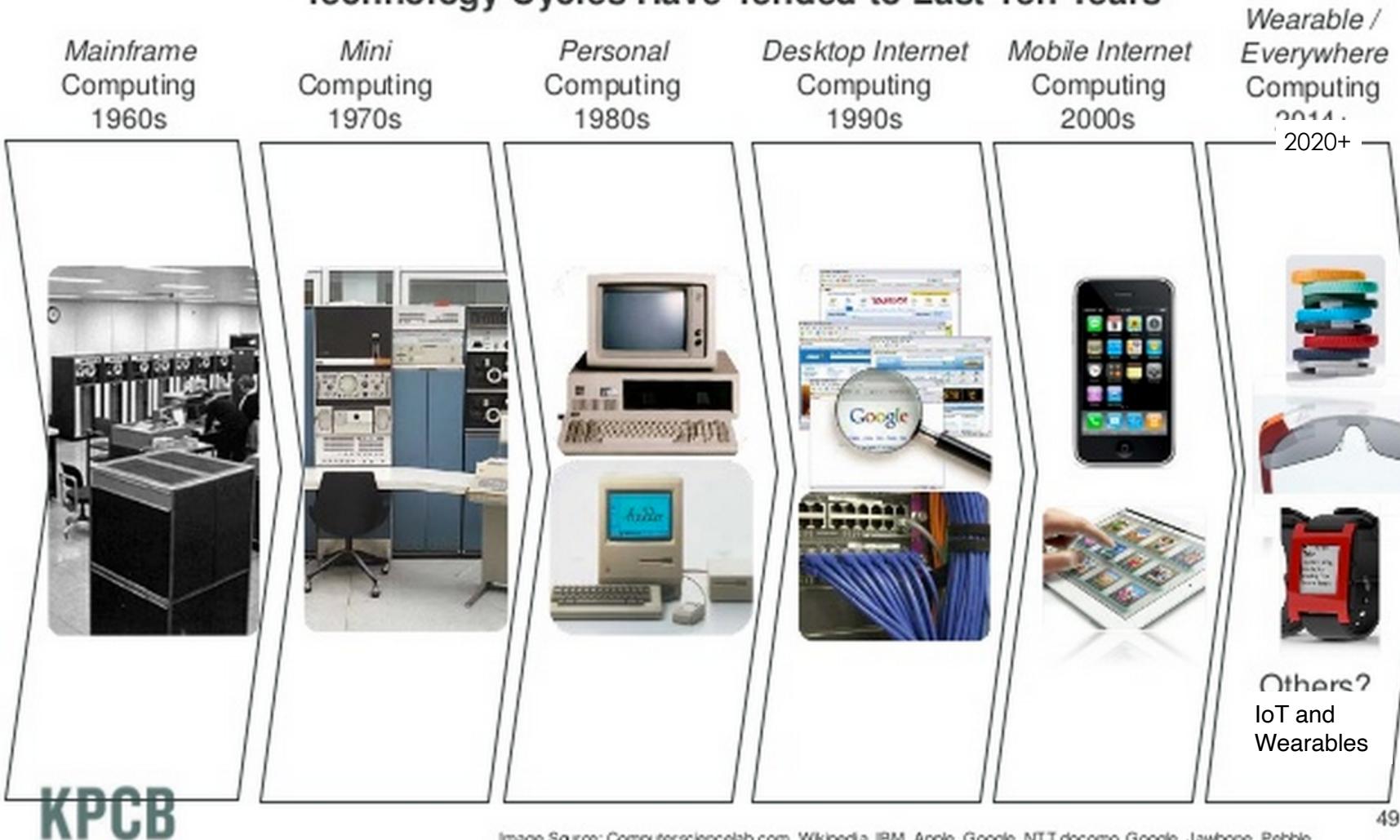


Image Source: Computersciencelab.com, Wikipedia, IBM, Apple, Google, NTT docomo, Google, Jawbone, Pebble.

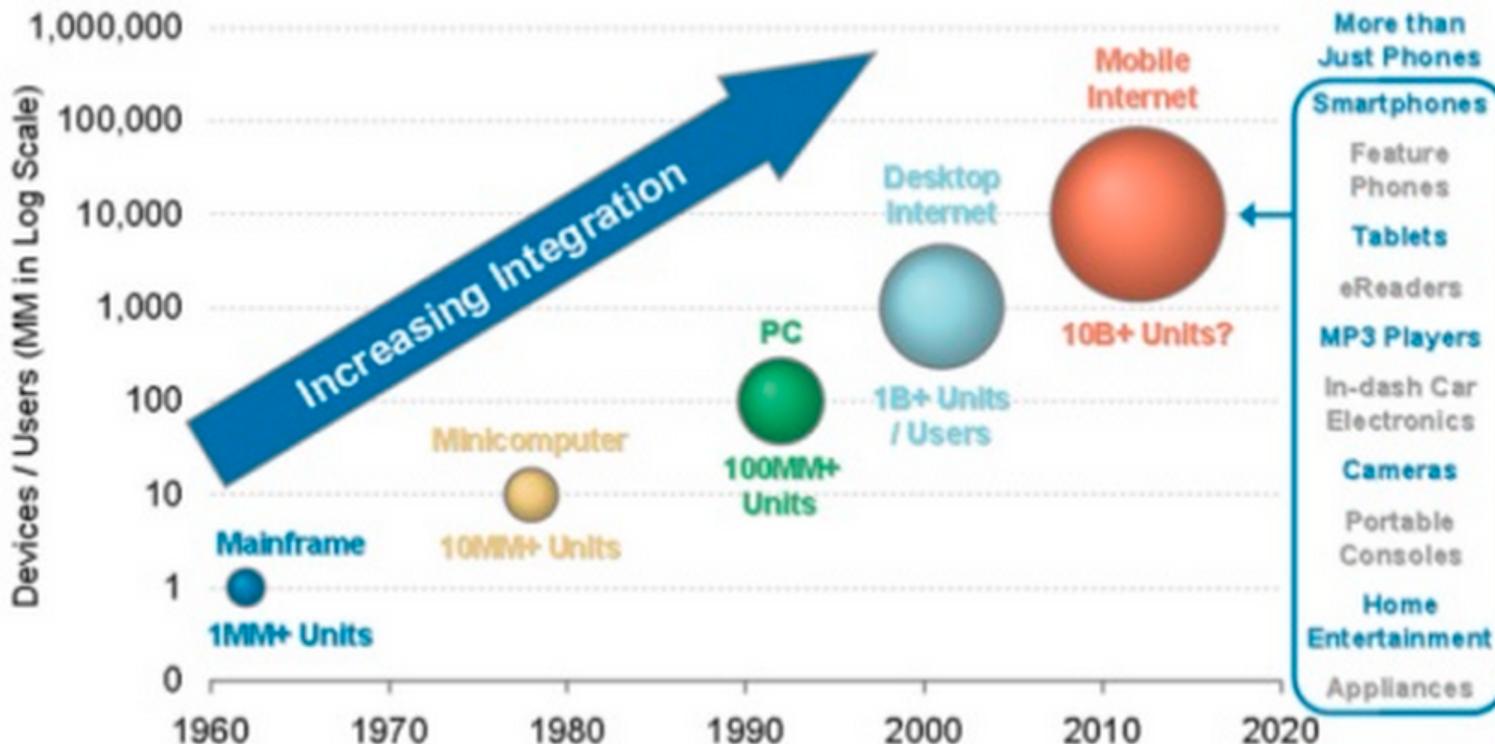
49

# Each New Computing Cycle = 10x > Installed Base than Previous Cycle

Exhibit 29

**Each new computing cycle typically generates  
around 10x the installed base of the previous cycle**

Devices or users in millions; logarithmic scale



# The Digital World

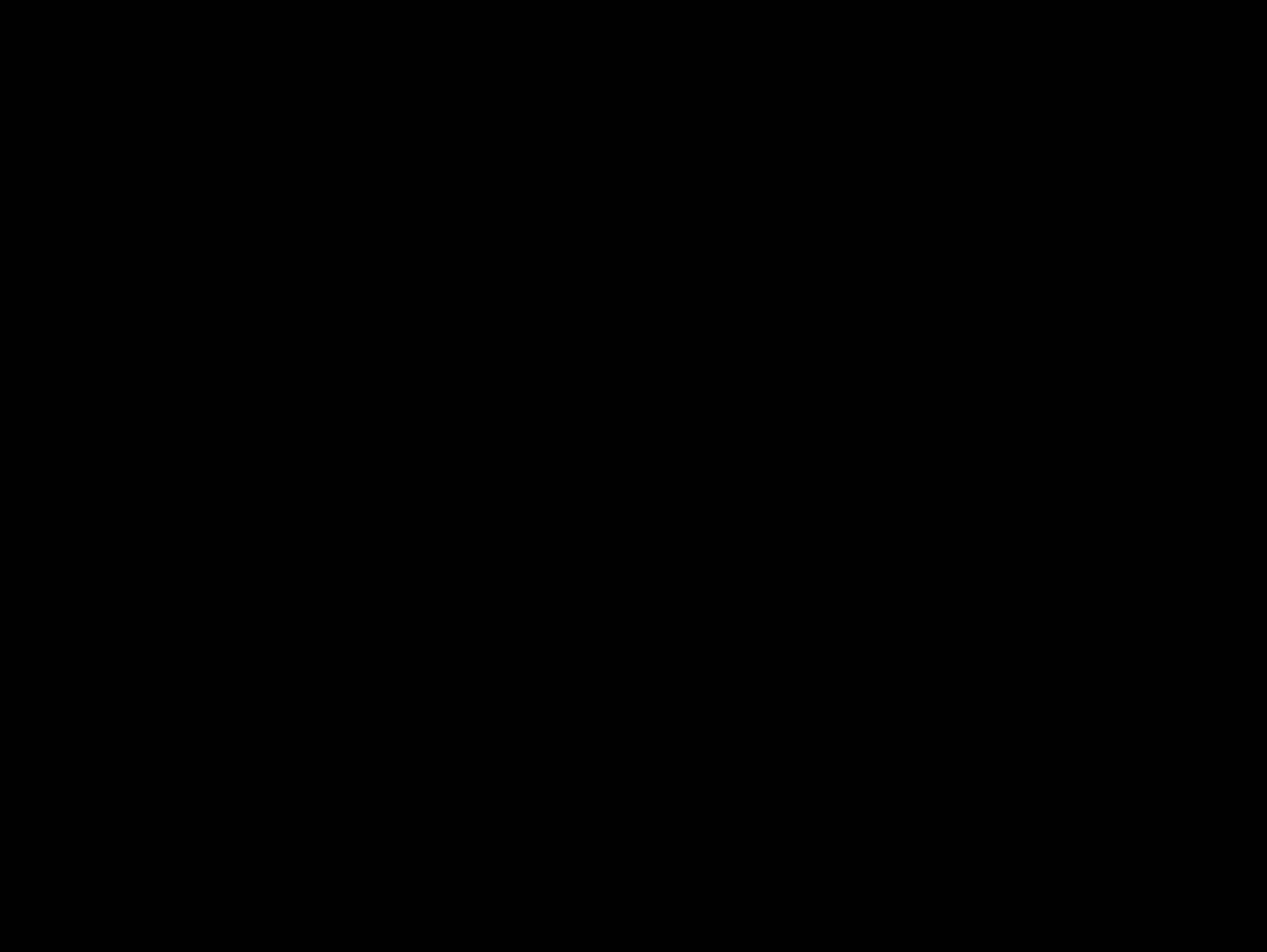
- Analysis of requirements of real users
- Development and use of Digital Technologies
- Study of their impact on the society
- (repeat)

*Building a Digital Knowledge Economy in the 21st Century will be fundamental to the UK's future prosperity. For the country to reap the maximum benefits, we need to put people at the centre of all our digital thinking.*

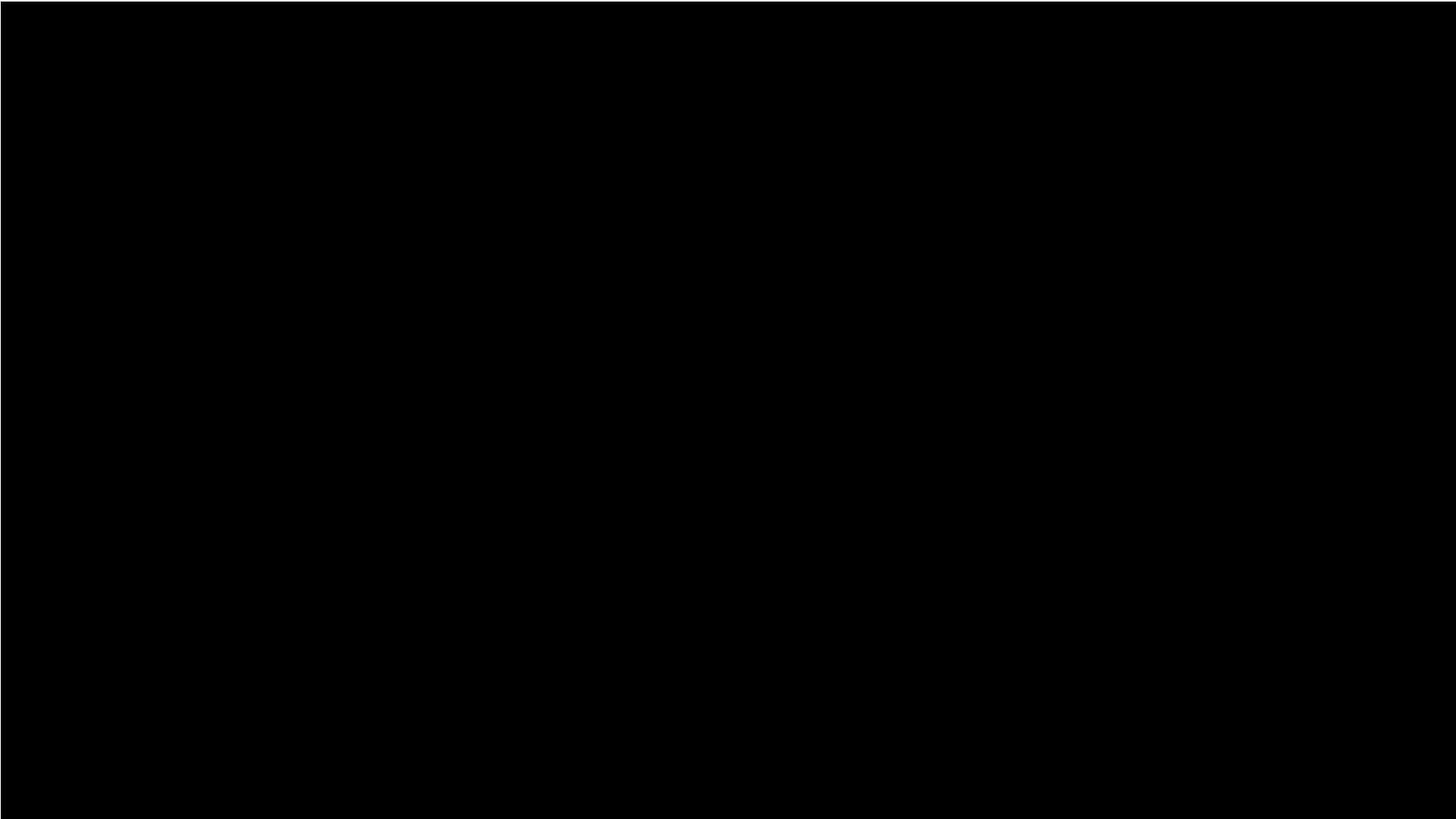
*Digital Britain, Final Report, June 2009*



# No longer office machines



# In my eyes (not an office machine)



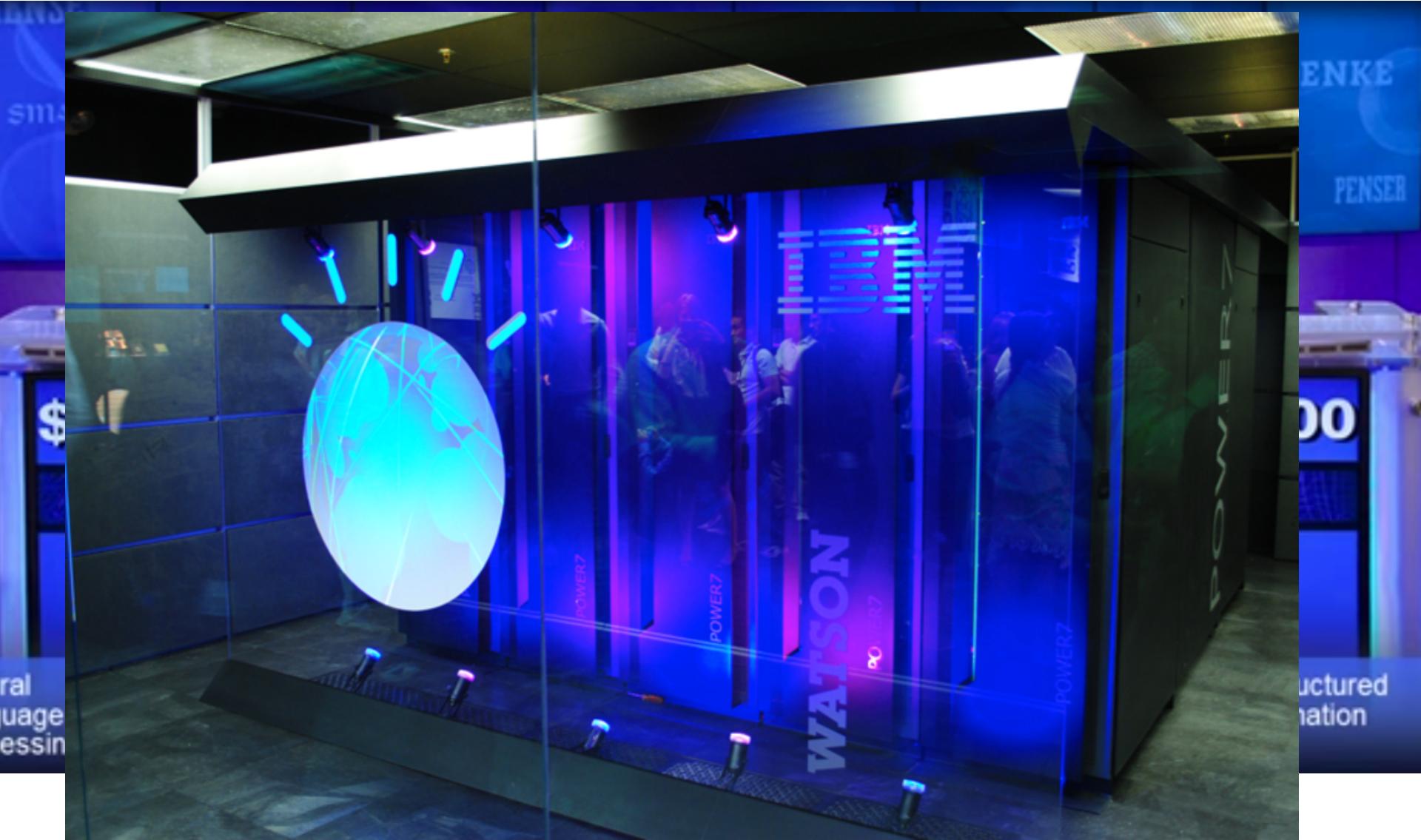
What is important here is the idea, not the actual product (which failed from a commercial po

amazon echo

[amazon.com/echo](http://amazon.com/echo)



# Watson



# You as focus

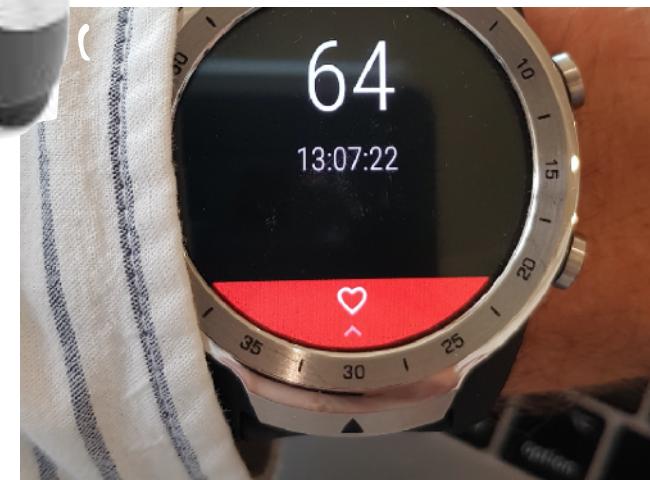
- The digital world is not (only) about developing digital technologies
- It is about **PEOPLE** having those technologies
  - With you
  - Around you
  - 24/7
- It is about those instruments communicating
  - To create a global communication system
  - To provide the **right information** at the right time

# The shape of things to come

And yes before you ask, these are all web technologies  
(surely you were not thinking of studying Web pages in this module?)



# It is about Health

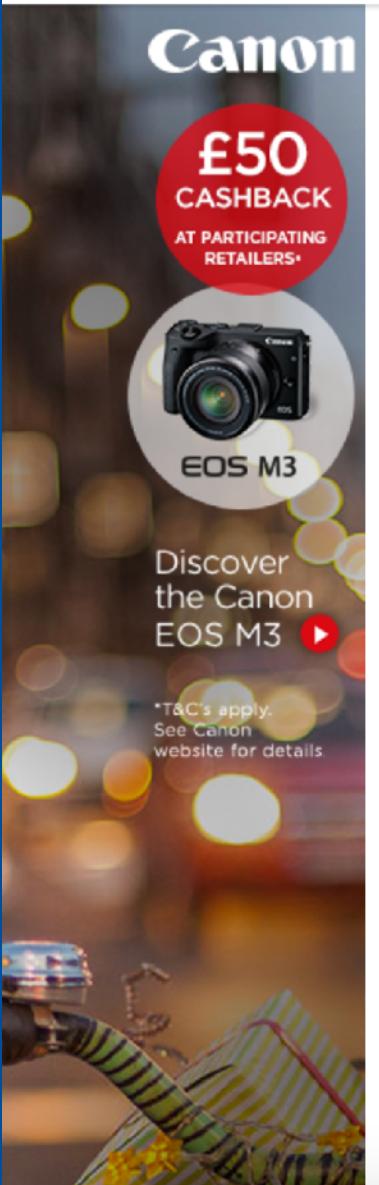


# Self driving cars



# It is about the Economy





# The death of the cabbie? Uber wants to buy 500,000 self-driving cars

CEO wants to hoover up all of its stock

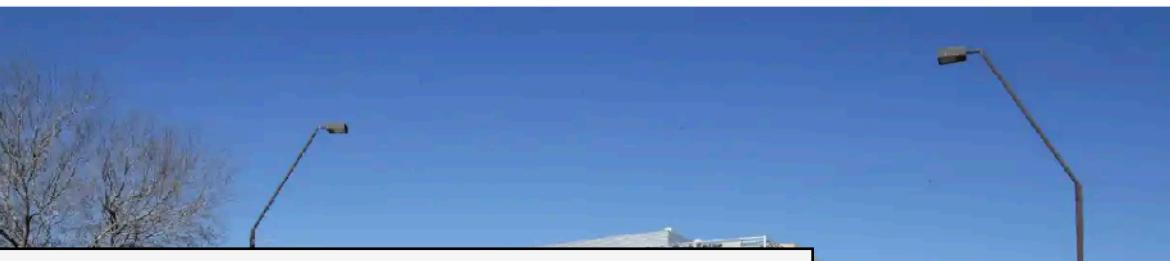
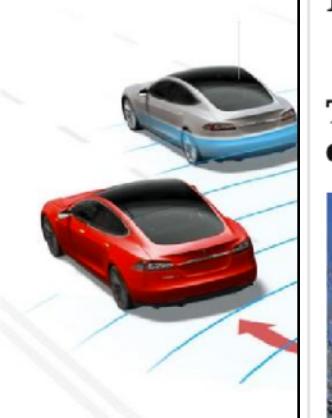
Christopher Hooton | @christophhooton | Wednesday 8 July 2015 | 0 comments



st

## Self-driving Uber kills Arizona woman in first fatal crash involving pedestrian

Tempe police said car was in autonomous mode at the time of the crash and that the vehicle hit a woman who later died at a hospital



News

## Uber cleared to restart self-driving car testing in California

By Allison Matyus February 6, 2020 2:27PM PST

[https://www.theguardian.co](https://www.theguardian.com)

<https://www.digitaltrends.com/news/uber-self-driving-testing-california/>

# Nah! It will never happen

Robert Thurston, a U.S. steam engine expert, opined in 1894, no less, that horses are not only "self-feeding, self-controlling, self-maintaining and self-reproducing, but they are far more economical in the energy they are able to develop from a given weight of fuel material, than any other existing form of motor."

Car propaganda also portrayed the horse as "untamable beast" and author of "frightful accidents." At the same time motor enthusiasts railed against regulations, speed limits and licensing requirement for new fangled jalopies.

In the end the removal of the horse from urban life and later the farm became a protracted drama that took more than 50 years. It also required the messy adoption of three fossil-fuel technologies.

CNET › Sci-Tech › How self-driving cars will cut accidents 90 percent (Q&A)

# How self-driving cars will cut accidents 90 percent (Q&A)

For Road Trip 2015, CNET talks with the University of Michigan's Peter Sweatman about the rapid merging of computers and cars, and the fake city in Ann Arbor where it's being put to the test.



## Sci-Tech



by Stephen Shankland

ANN ARBOR, Michigan -- Peter Sweatman isn't in charge of the computing revolution that's sweeping the auto industry, but he's at the center of it.

As director of the [University of Michigan's Transportation Research Institute \(UMTRI\)](#) in



# It is about Education



GlobeNewswire

## Global Kids Tablet Market Will Reach USD 36.89 Billion By 2027: Zion Market Research

According to the report, the global kids tablet market was USD 9.54 billion in 2018 and is expected to generate USD 36.89 billion by 2027, at a CAGR of 16.2% between 2019 and 2027.

f [Twitter](#) [LinkedIn](#) [Google+](#) [Pinterest](#) | @ Email | Print Friendly | Share

July 04, 2019 09:01 ET | Source: Zion Market Research



# Wii are getting fitter: Retirement home installs computer game to keep residents trim

Last updated at 17:38 13 September 2007

Young-at-heart pensioners bored of bowls and bridge have started videogame competitions against each other at their retirement home.

Senior citizens at the Sunrise Home in Birmingham have ditched their zimmerframes because they're hooked on the Nintendo Wii games console.

Pensioners as old as 103 have been joining in the fun on the best-selling console, where gamers use a motion-sensitive controller to mimic sports like tennis, bowling, and boxing.

Residents have been pitting themselves against each other and games have become "competitive" since a Sunrise chef brought the console into the retirement home.

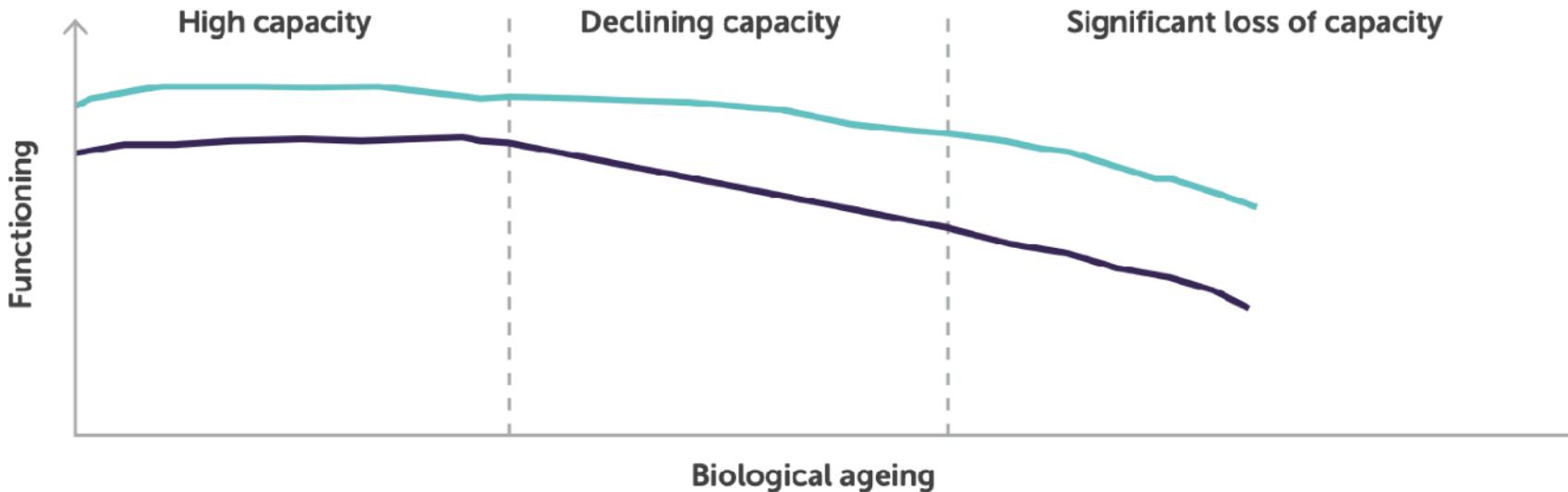
**Scroll down for more...**



© NEWSTEAM



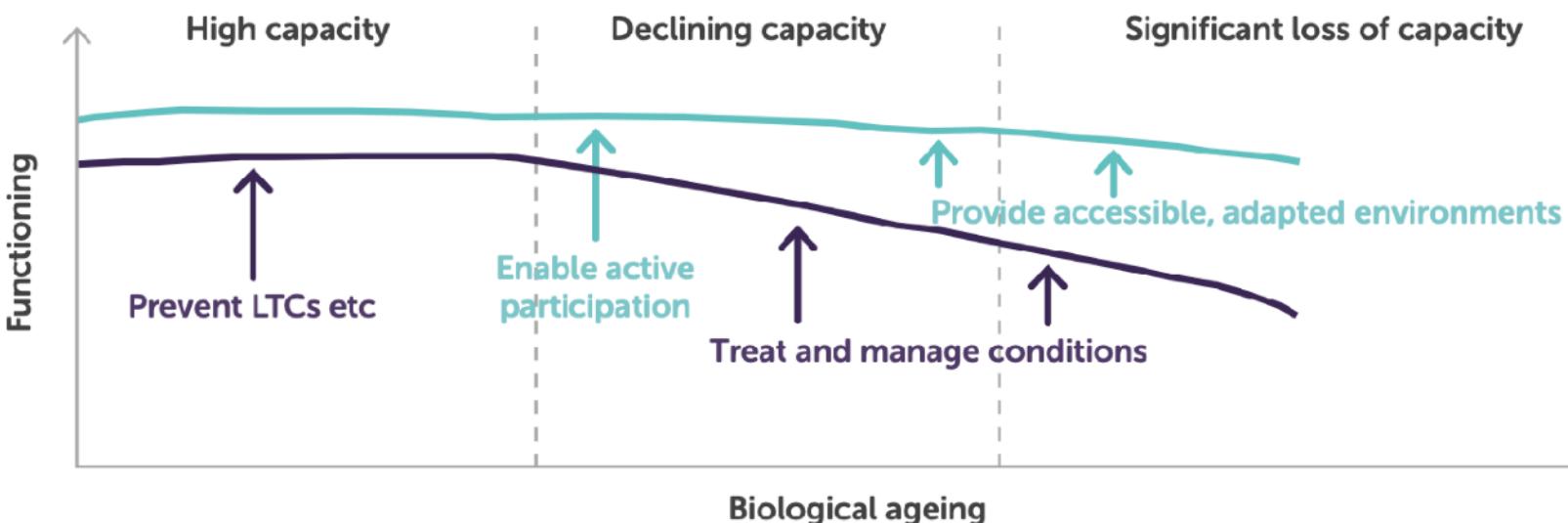
STEPHEN POND



**Additional benefits from supportive environments**

— Functional ability      — Intrinsic capacity

**Healthy Ageing**



**Additional benefits from supportive environments**

— Functional ability      — Intrinsic capacity

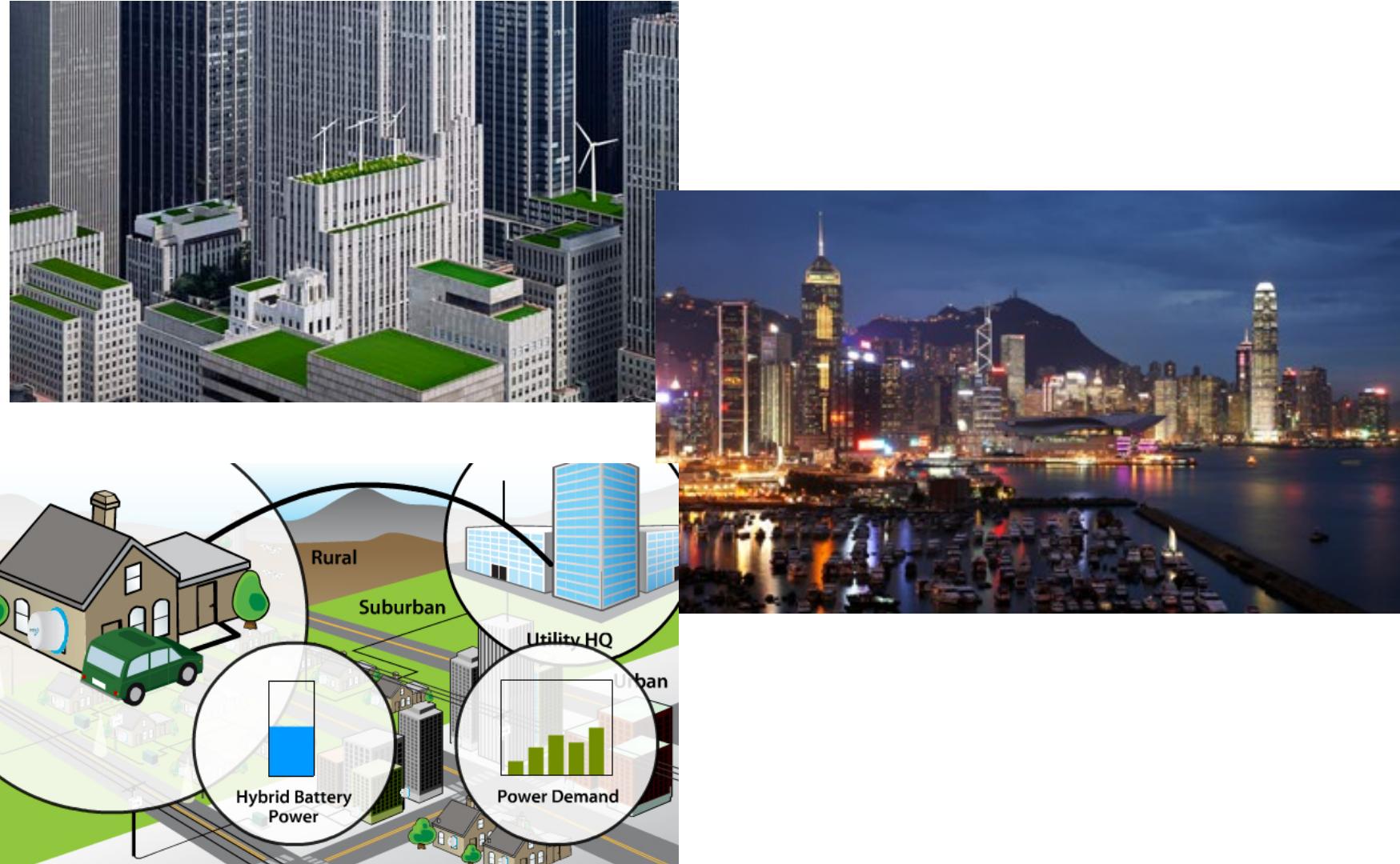
- Although we have experienced a huge increase in life expectancy,
  - a significant proportion of those extra years are spent in poor health.
- In 2018 the Prime Minister announced a mission to
  - “ensure that people can enjoy at least five extra healthy, independent years of life by 2035,
  - while narrowing the gap between the experience of the richest and poorest”

Today, men aged 65 can expect to live another 19 years, but only 10 of those will be spent in good health. Women aged 65 can expect to live another 21 years, but only 11 will be spent in good health (ONS, 2017). In addition, there are significant inequalities in healthy life expectancy, with people in lower socio-economic groups developing long-term conditions at younger ages and spending a larger proportion of their later life in poor health.

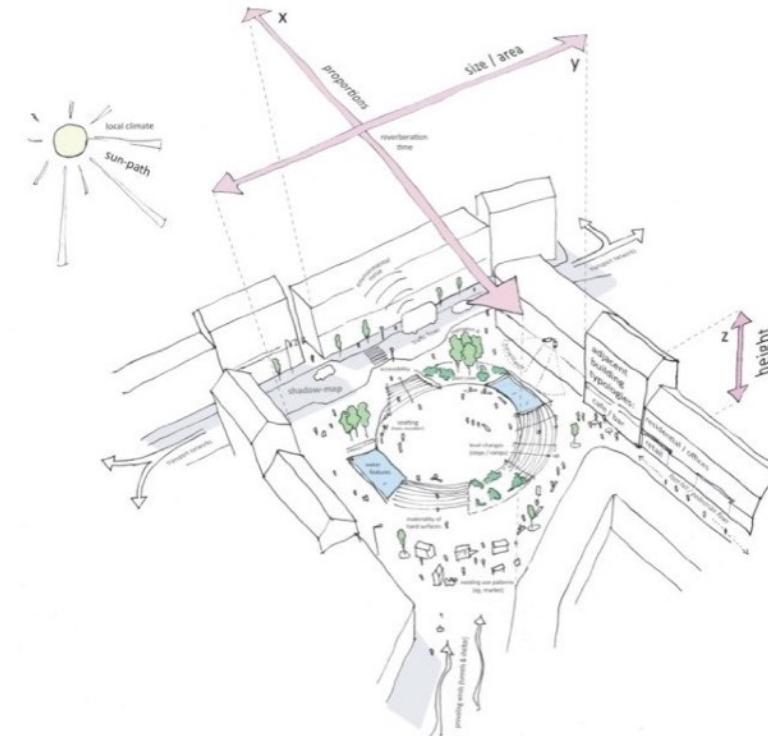
There are significant opportunities for innovation across the whole spectrum of prevention, management, mitigation and adaptation. However, the private sector has been slow to respond. Despite people aged 50 and over holding an estimated 77% of the UK's financial wealth in 2014 (Centre for Economics & Business Research, 2015), there is a dearth of products and services in the market that meet the desires and aspirations, as well as the needs, of an older population.

<https://www.ageing-better.org.uk/publications/industrial-strategy-challenge-fund-healthy-ageing-framework>

# It is about Urban Spaces



# It is about Arts and Humanities



# It is about the newsroom

The New York Times's success lays bare  
the media's disastrous state

*Emily Bell*



A handful of legacy institutions thrive as digital startups face  
increasing pressures



# Humans Need Not Apply

<https://www.youtube.com/watch?v=7Pq-S557XQU>

Occupation	Number of Workers
Transportation	3,628,000
Retail salespersons	3,286,000
First line supervisors	3,132,000
Cashiers	3,109,000
Secretaries	3,082,000
Managers, all other	2,898,000
Sales representatives	2,865,000
Registered nurses	2,843,000
Elementary school teachers	2,813,000
Janitors / cleaners	2,186,000



# it is about commerce

This got an enormous acceleration with the pandemic



Centre for  
Retail  
Research

Home About Us Who's Gone Bust? The New Retail Retail Celebrations Retail Crime & Fraud Quick Cont

## Who's Gone Bust in Retail?

### Who's Gone Bust in UK Retailing in 2019-2020?

Please use the links below to navigate to each section of Who's Gone Bust in retail.

- [Analysis of Major Retail Failures 2008-19](#)
- [Who's Gone Bust in 2019 by Company](#)
- [What's Included and Excluded](#)
- [Archives – Pre-2019](#)



**High Street shops need to learn from online retailers if avalanche of store closures is to be reversed, experts warn**

LOCATION 11 Sep 2019 by Paul Skeldon



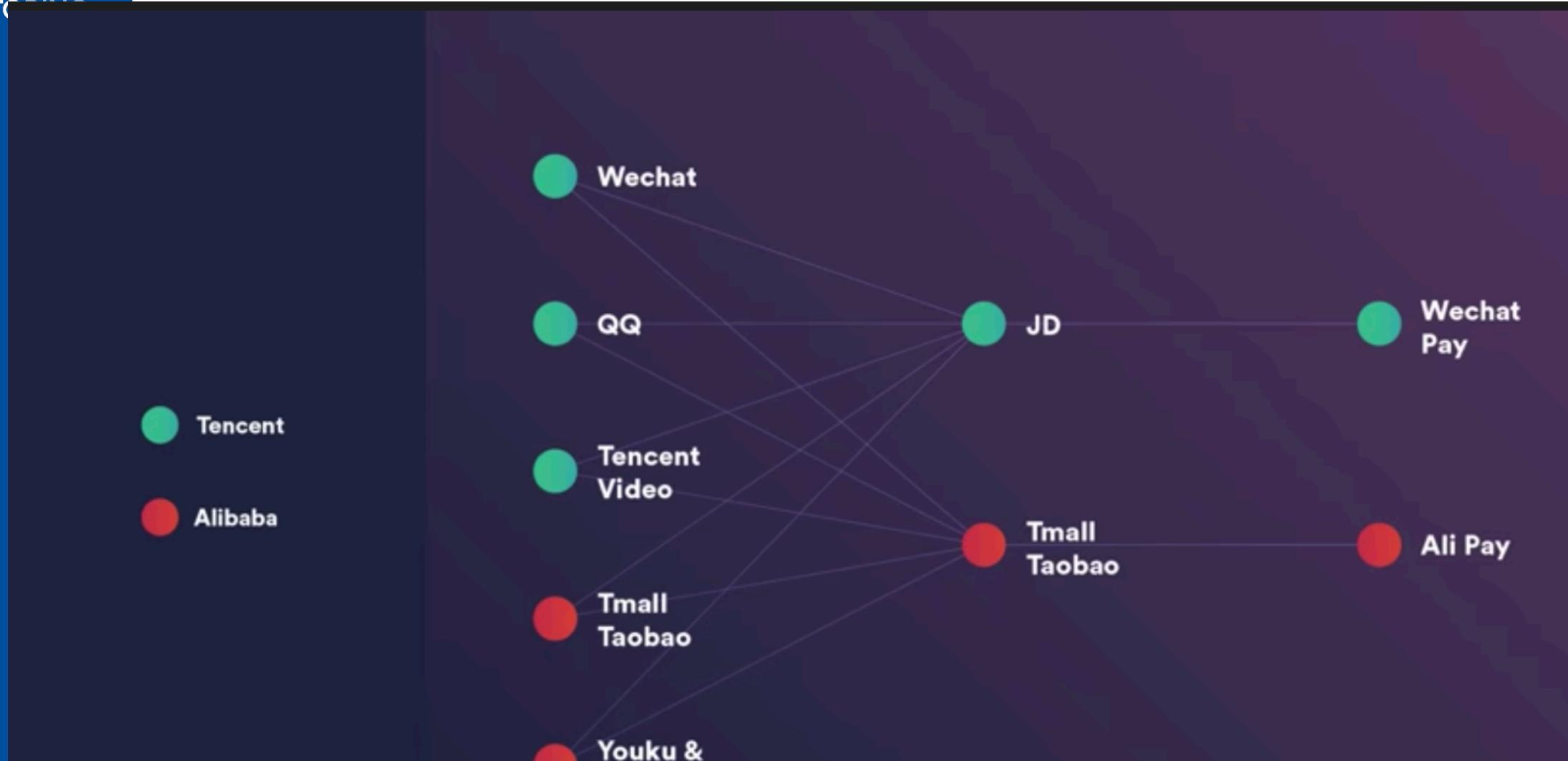
# It is about (e)Commerce

Angela Wang: How China is changing the future of e-commerce



<https://www.youtube.com/watch?v=dOt4NkcmIUg>

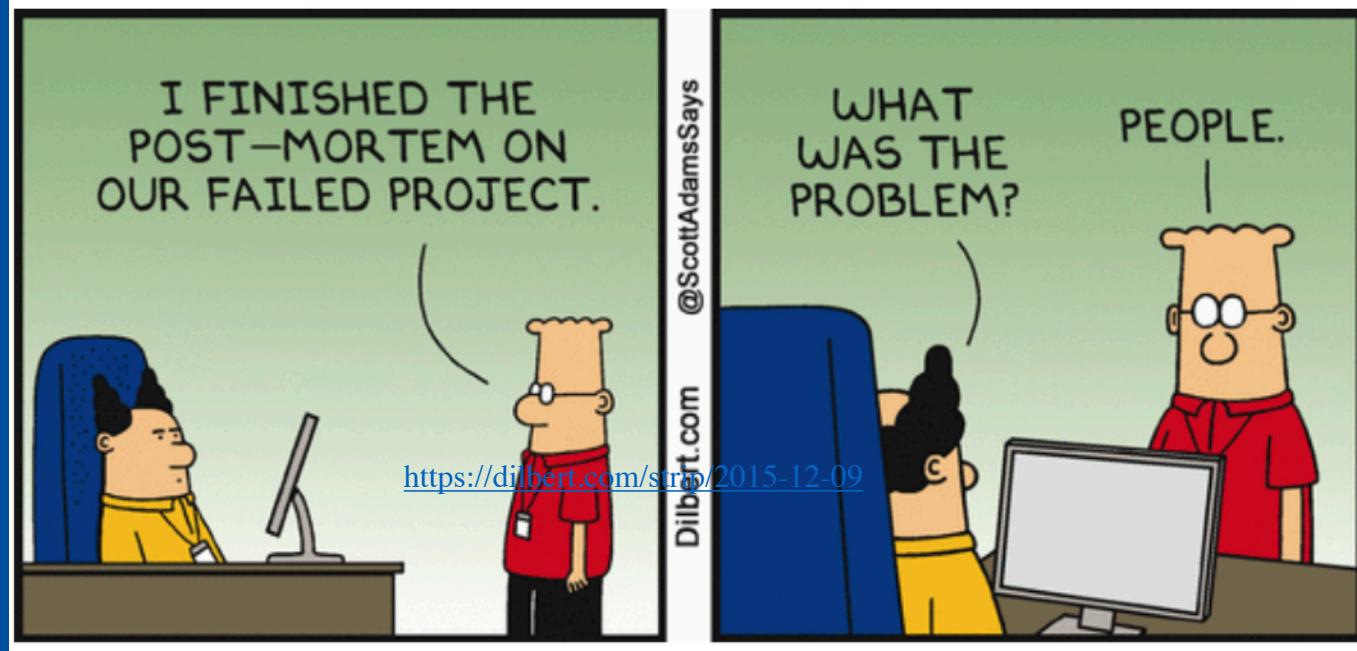
# Integrated environment



# Pesky Humans in the Loop



Wednesday December 09, 2015 *The Problem Is People*



# Internet connectivity

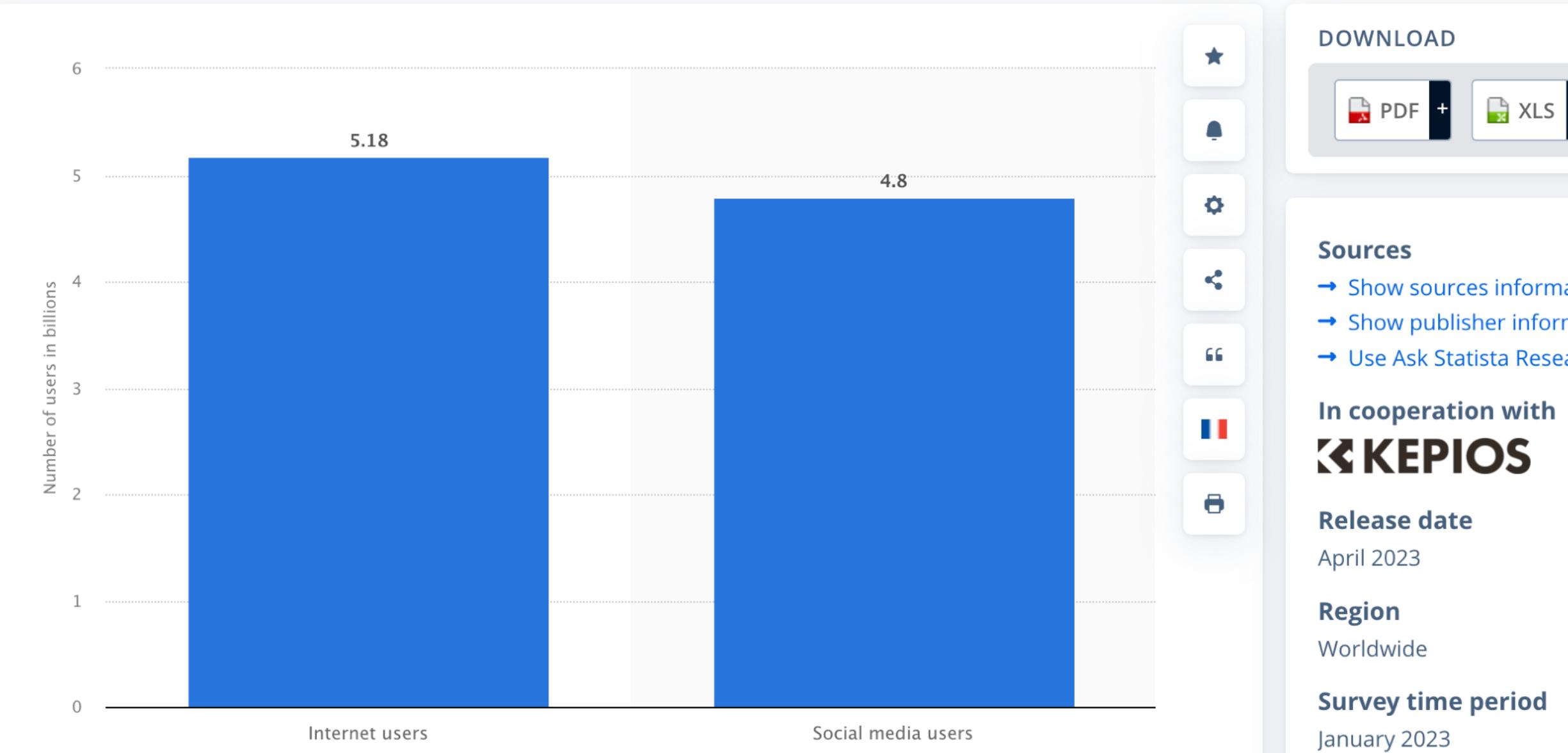
- Internet usage is widespread in UK and worldwide
- According to the Uk Office for National statistics
  - 87.9% of adults have used Internet in the last 3 months
- There is still an age bias
  - Looking at <45 years old the percentage increases to 98.
  - >75 only 38.7%
  - But this will gradually disappear

Source: Office for National Statistics

<https://www.ons.gov.uk/businessindustryandtrade/itandinternetindustry/bulletins/internetusers/2016>

# Number of internet and social media users worldwide as of April 2023 (in billions)

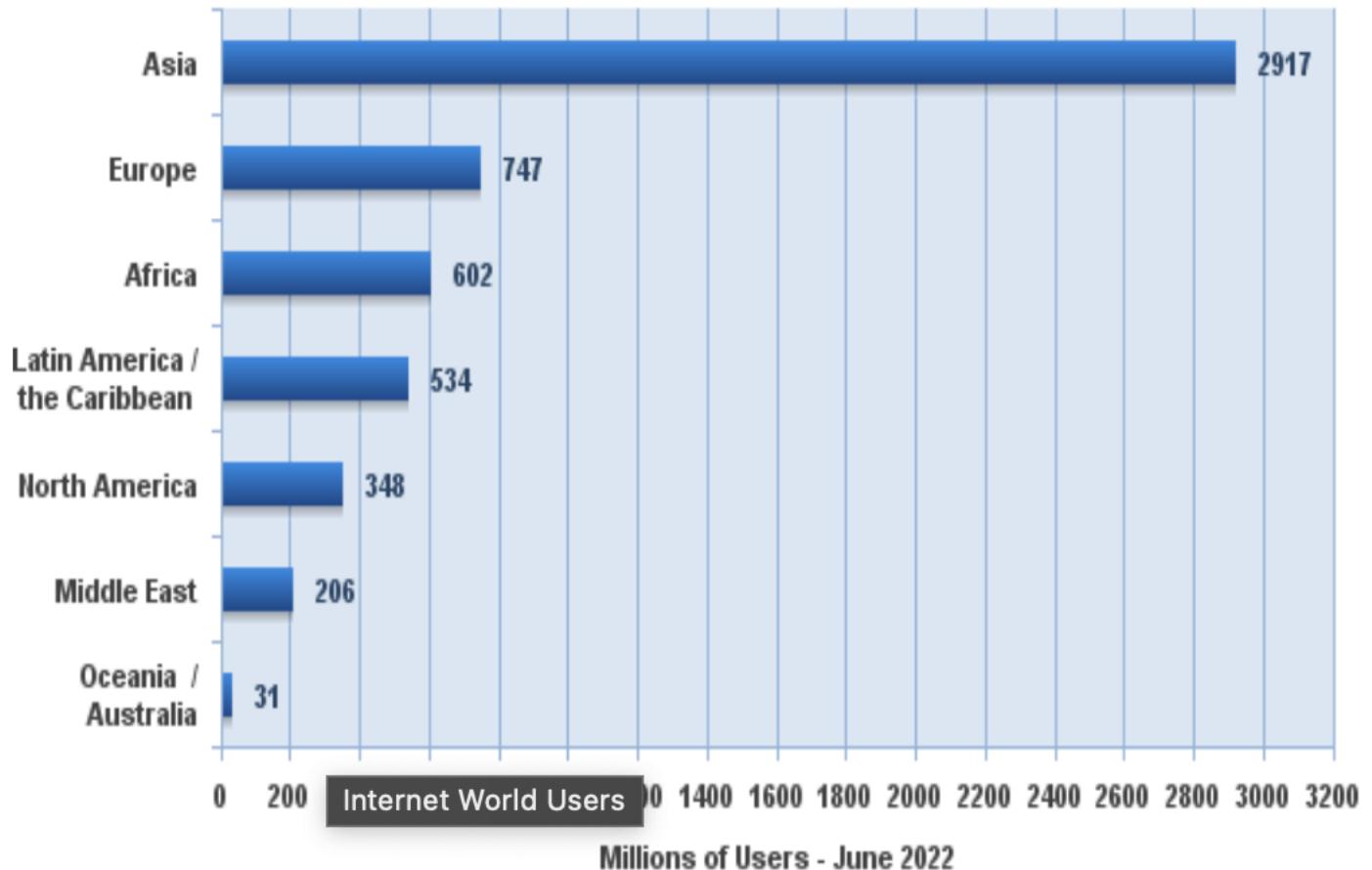
<https://www.statista.com/statistics/617136/digital-population-worldwide/#:~:text=As%20of%20April%202023%2C%20there,population%2C%20were%20social%20media%20users>



# Users by Region

WORLD INTERNET USAGE AND POPULATION STATISTICS 2023 Year Estimates						
World Regions	Population ( 2022 Est.)	Population % of World	Internet Users 31 Dec 2021	Penetration Rate (% Pop.)	Growth 2000-2023	Internet World %
<a href="#">Africa</a>	<a href="#">1,394,588,547</a>	17.6 %	<a href="#">601,940,784</a>	43.2 %	13,233 %	11.2 %
<a href="#">Asia</a>	<a href="#">4,352,169,960</a>	54.9 %	<a href="#">2,916,890,209</a>	67.0 %	2,452 %	54.2 %
<a href="#">Europe</a>	<a href="#">837,472,045</a>	10.6 %	<a href="#">747,214,734</a>	89.2 %	611 %	13.9 %
<a href="#">Latin America / Carib.</a>	<a href="#">664,099,841</a>	8.4 %	<a href="#">534,526,057</a>	80.5 %	2,858 %	9.9 %
<a href="#">North America</a>	<a href="#">372,555,585</a>	4.7 %	<a href="#">347,916,694</a>	93.4 %	222 %	6.5 %
<a href="#">Middle East</a>	<a href="#">268,302,801</a>	3.4 %	<a href="#">206,760,743</a>	77.1 %	6,194 %	3.8 %
<a href="#">Oceania / Australia</a>	<a href="#">43,602,955</a>	0.5 %	<a href="#">30,549,185</a>	70.1 %	301 %	0.6 %
<a href="#">WORLD TOTAL</a>	<a href="#">7,932,791,734</a>	100.0 %	<a href="#">5,385,798,406</a>	67.9 %	1,392 %	100.0 %
NOTES: (1) Internet Usage and World Population Statistics estimates are for June 30, 2022. (2) CLICK on each world region name for detailed regional usage information. (3) Demographic (Population) numbers are based on data from the <a href="#">United Nations Population Division</a> . (4) Internet usage information comes from data published by <a href="#">Nielsen Online</a> , by the <a href="#">International Telecommunications Union</a> , by <a href="#">GfK</a> , by local ICT Regulators and other reliable sources. (5) For definitions, navigation help and disclaimers, please refer to the <a href="#">Website Surfing Guide</a> . (6) The information from this website may be cited, giving the due credit to <a href="#">www.internetworldstats.com</a> . Copyright © 2022, Miniwatts Marketing Group. All rights reserved worldwide.						

## Internet Users in the World by Geographic Regions - 2022

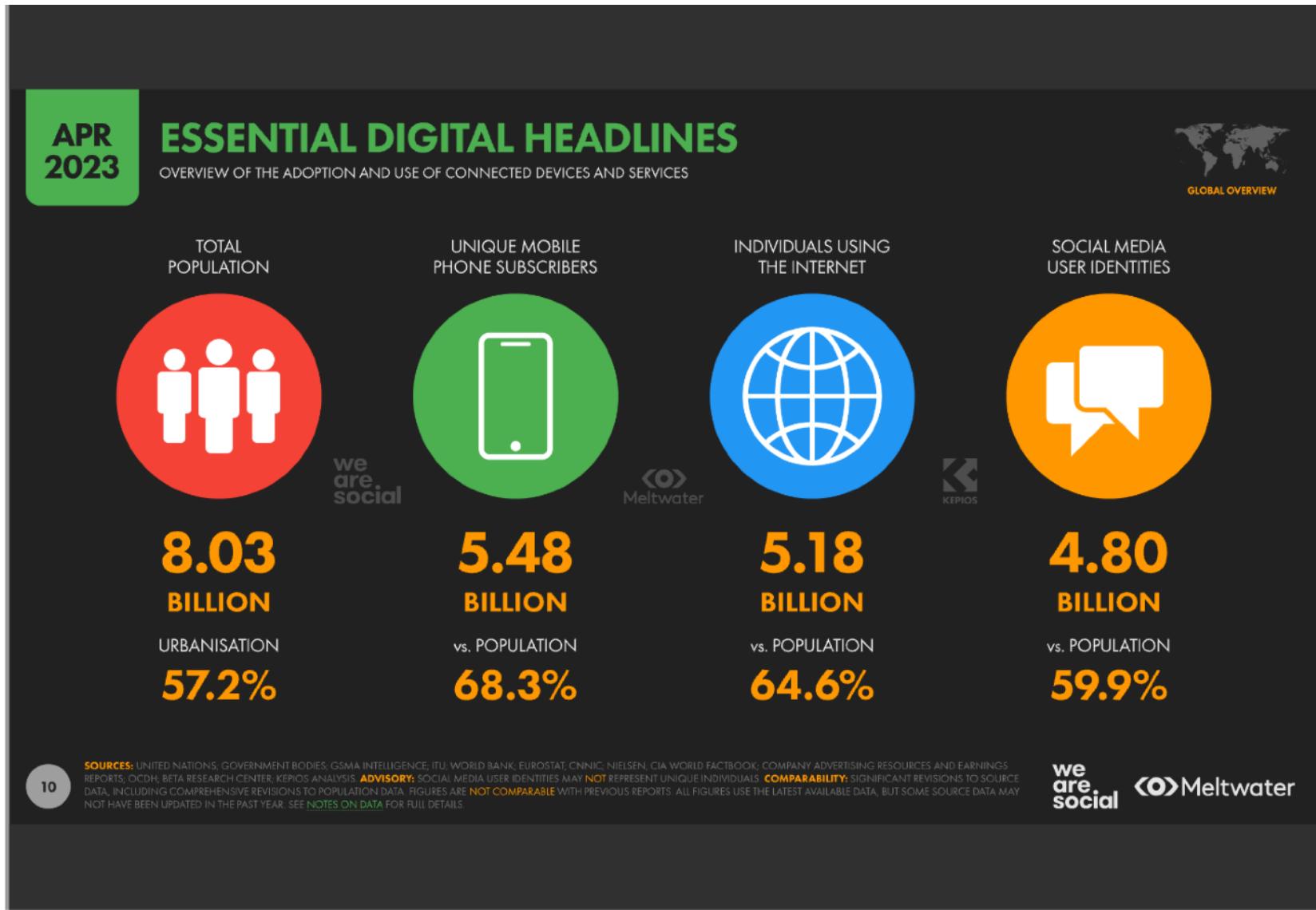


<http://www.internetworldstats.com/stats.htm>

# A look at the world

<https://wearesocial.com/uk/blog/2023/04/the-global-state-of-digital-in-april-2023/>

- Mobile devices are the main way for people to be online
- In 2016 mobile internet access surpassed desktop access for the first time
- In 2017 mobile usage has risen of 30% whilst laptops and desktop usage has decreased of 20%



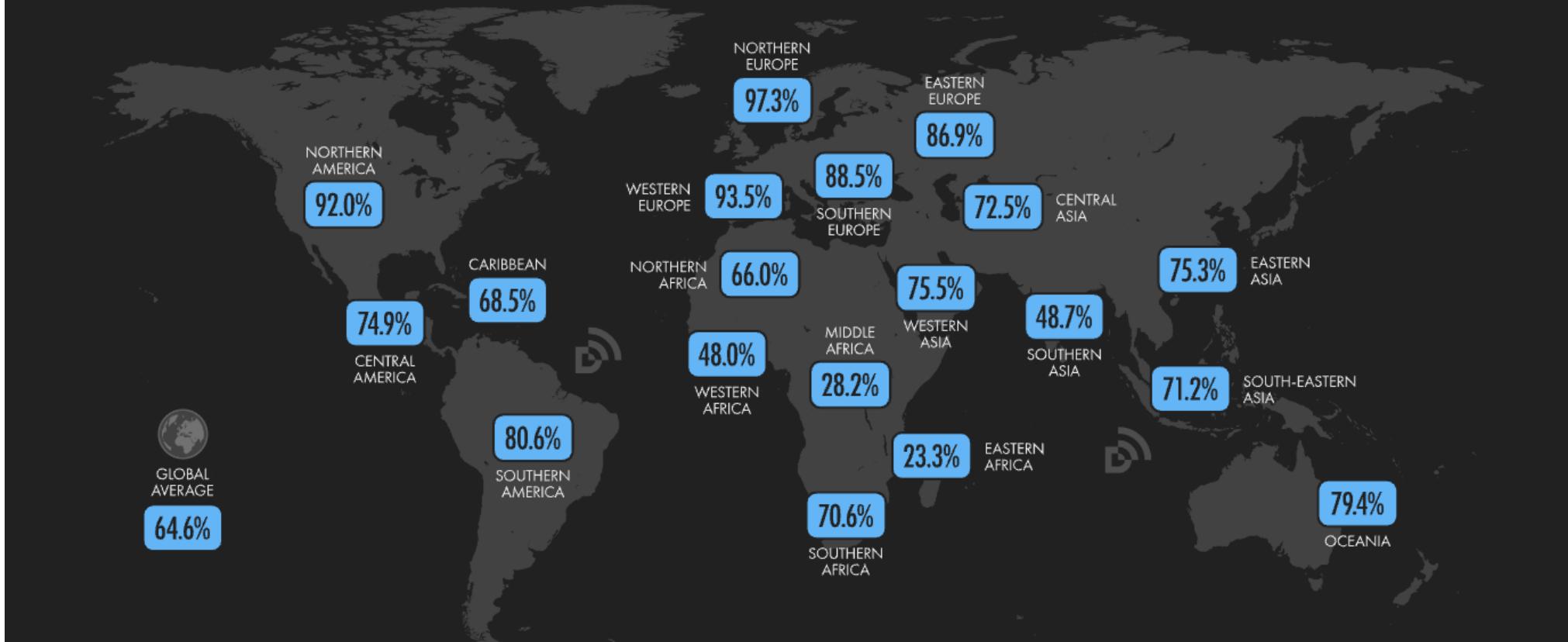
APR  
2023

# INTERNET ADOPTION

INDIVIDUALS USING THE INTERNET AS A PERCENTAGE OF TOTAL POPULATION



GLOBAL OVERVIEW



20

**SOURCES:** KEPPIOS ANALYSIS; ITU; GSMA INTELLIGENCE; EUROSTAT; WORLD BANK; GOOGLE'S ADVERTISING RESOURCES; CIA WORLD FACTBOOK; CNNIC; NIELSEN; LOCAL GOVERNMENT AUTHORITIES; UNITED NATIONS. **NOTE:** REGIONS BASED ON THE UNITED NATIONS GEOSCHMIE. **COMPARABILITY:** SOURCE AND BASE CHANGES. ALL FIGURES USE THE LATEST AVAILABLE DATA, BUT SOME SOURCE DATA MAY NOT HAVE BEEN UPDATED IN THE PAST YEAR. SEE [NOTES ON DATA](#) FOR DETAILS.

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20 of 305



English

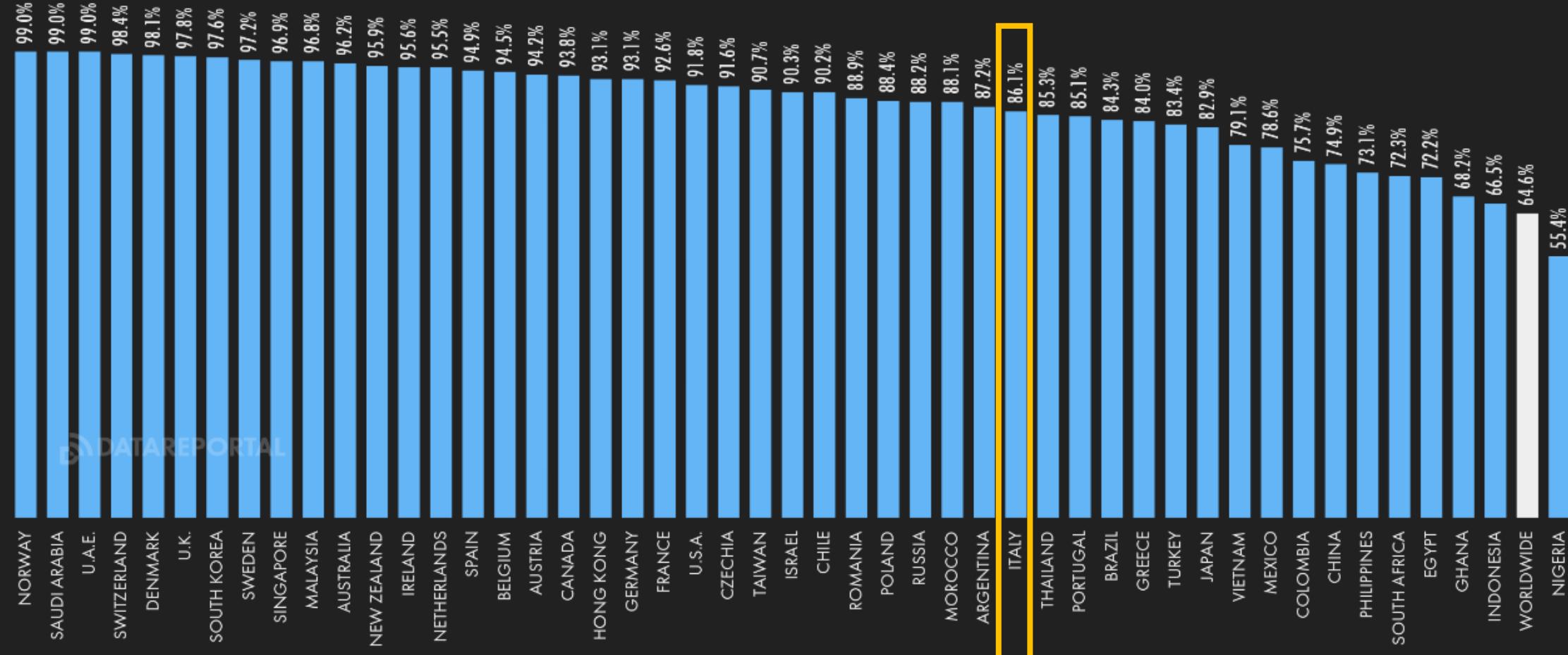
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2023

# INTERNET ADOPTION

## INDIVIDUALS USING THE INTERNET AS A PERCENTAGE OF TOTAL POPULATION



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2023

## DEVICE OWNERSHIP

PERCENTAGE OF INTERNET USERS AGED 16 TO 64 WHO OWN EACH KIND OF DEVICE

**NOTE:** GWI HAVE REVISED THEIR METHODOLOGY. PLEASE READ THE IMPORTANT NOTES ON COMPARING DATA AT THE START OF THIS REPORT BEFORE COMPARING DATA ON THIS CHART WITH PREVIOUS REPORTS



ANY KIND OF  
MOBILE PHONE



GWI.

**96.8%**

YEAR-ON-YEAR CHANGE  
**+0.3% (+30 BPS)**

SMART  
PHONE



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**96.6%**

YEAR-ON-YEAR CHANGE  
**+0.4% (+40 BPS)**

FEATURE  
PHONE



GWI.

**7.2%**

YEAR-ON-YEAR CHANGE  
**-17.2% (-150 BPS)**

LAPTOP OR  
DESKTOP COMPUTER



GWI.

**57.8%**

YEAR-ON-YEAR CHANGE  
**-5.1% (-310 BPS)**

TABLET  
DEVICE



**31.6%**

YEAR-ON-YEAR CHANGE  
**-8.4% (-290 BPS)**

GAMES  
CONSOLE



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**18.6%**

YEAR-ON-YEAR CHANGE  
**-9.7% (-200 BPS)**

SMART WATCH OR  
SMART WRISTBAND



GWI.

**27.4%**

YEAR-ON-YEAR CHANGE  
**-0.4% (-10 BPS)**

TV STREAMING  
DEVICE



KEPIOS

**14.8%**

YEAR-ON-YEAR CHANGE  
**-8.1% (-130 BPS)**

SMART HOME  
DEVICE



GWI.

**14.9%**

YEAR-ON-YEAR CHANGE  
**-0.7% (-10 BPS)**

VIRTUAL REALITY  
DEVICE



**4.0%**

YEAR-ON-YEAR CHANGE  
**-18.4% (-90 BPS)**

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SOURCE: GWI (Q4 2022). FIGURES REPRESENT THE FINDINGS OF A BROAD GLOBAL SURVEY OF INTERNET USERS AGED 16 TO 64. SEE [GWI.COM](#) FOR FULL DETAILS. NOTES: PERCENTAGE CHANGE VALUES REPRESENT RELATIVE YEAR-ON-YEAR 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. COMPARABILITY: STARTING WITH THEIR Q4 2022 WAVE OF RESEARCH, GWI INTRODUCED A REVISED SURVEY METHODOLOGY THAT RESULTED IN A DECLINE IN VALUES FOR A WIDE VARIETY OF DATA POINTS. AS A RESULT, DATA POINTS ON THIS CHART MAY NOT BE DIRECTLY COMPARABLE WITH SIMILAR DATA POINTS PUBLISHED IN PREVIOUS REPORTS.

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English

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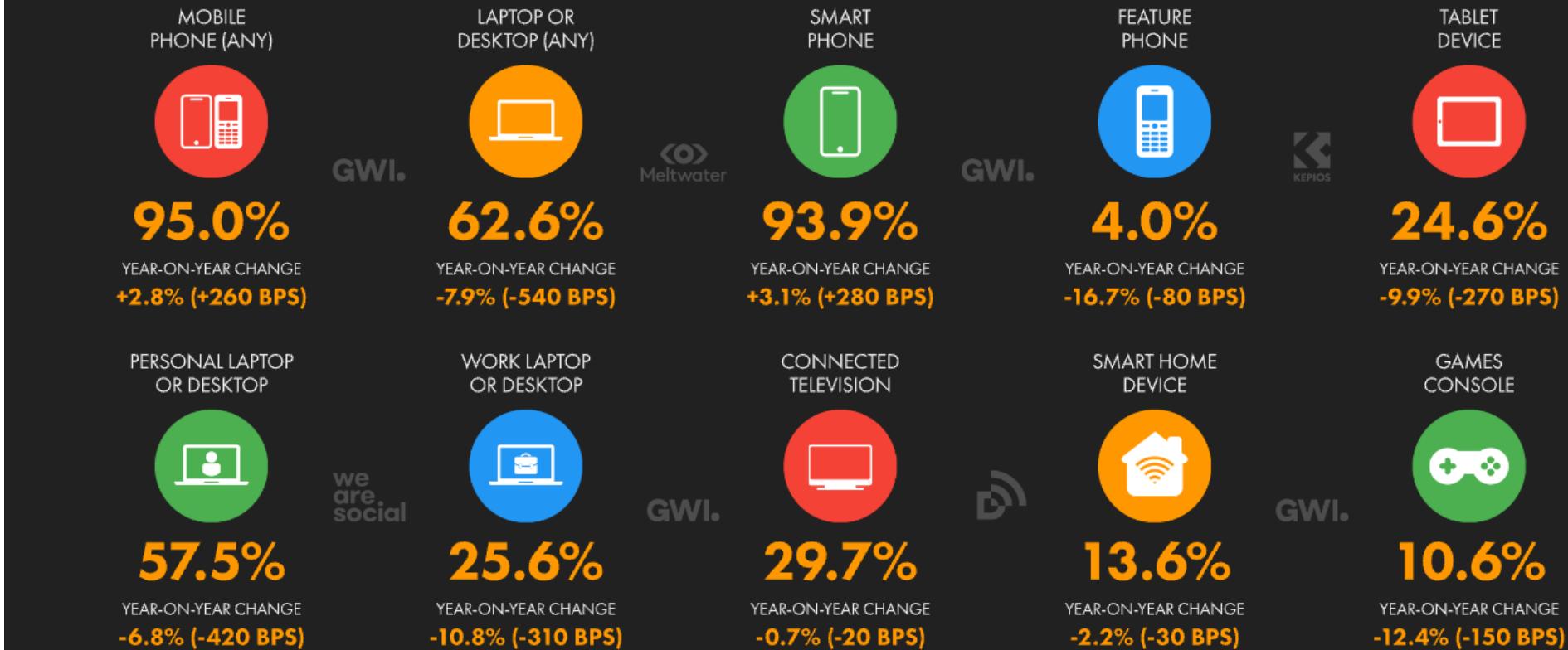
## DEVICES USED TO ACCESS THE INTERNET

PERCENTAGE OF INTERNET USERS AGED 16 TO 64 WHO USE EACH KIND OF DEVICE TO ACCESS THE INTERNET

**NOTE:** GWI HAVE REVISED THEIR METHODOLOGY. PLEASE READ THE IMPORTANT NOTES ON COMPARING DATA AT THE START OF THIS REPORT BEFORE COMPARING DATA ON THIS CHART WITH PREVIOUS REPORTS



GLOBAL OVERVIEW



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**SOURCE:** GWI (Q4 2022). FIGURES REPRESENT THE FINDINGS OF A BROAD GLOBAL SURVEY OF INTERNET USERS AGED 16 TO 64. SEE [GWI.COM](https://GWI.COM) FOR FULL DETAILS. **NOTES:** "MOBILE PHONE (ANY)" INCLUDES USERS WHO ACCESS VIA A SMARTPHONE OR A FEATURE PHONE. "LAPTOP OR DESKTOP (ANY)" INCLUDES USERS WHO ACCESS VIA THEIR OWN COMPUTER OR A COMPUTER PROVIDED BY THEIR EMPLOYER. PERCENTAGE CHANGE VALUES REFLECT RELATIVE CHANGE. "BPS" VALUES SHOW THE CHANGE IN BASIS POINTS, AND REFLECT ABSOLUTE CHANGE. **COMPARABILITY:** CHANGES TO GWI'S SURVEY METHODOLOGY IN Q4 2022 MEAN THAT DATA POINTS ON THIS CHART MAY NOT BE DIRECTLY COMPARABLE WITH SIMILAR DATA POINTS PUBLISHED IN PREVIOUS REPORTS.

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## DAILY TIME SPENT WITH MEDIA

THE AVERAGE AMOUNT OF TIME EACH DAY THAT INTERNET USERS AGED 16 TO 64 SPEND WITH DIFFERENT KINDS OF MEDIA AND DEVICES  
**NOTE:** GWI HAVE REVISED THEIR METHODOLOGY. PLEASE READ THE IMPORTANT NOTES ON COMPARING DATA AT THE START OF THIS REPORT BEFORE COMPARING DATA ON THIS CHART WITH PREVIOUS REPORTS



TIME SPENT USING  
THE INTERNET



**6H 35M**

YEAR-ON-YEAR CHANGE  
**-4.4% (-18 MINS)**

TIME SPENT WATCHING TELEVISION  
(BROADCAST AND STREAMING)



**3H 12M**

YEAR-ON-YEAR CHANGE  
**-1.0% (-2 MINS)**

TIME SPENT USING  
SOCIAL MEDIA



**2H 24M**

YEAR-ON-YEAR CHANGE  
**-3.4% (-5 MINS)**

TIME SPENT READING PRESS MEDIA  
(ONLINE AND PHYSICAL PRINT)



**1H 49M**

YEAR-ON-YEAR CHANGE  
**-6.8% (-8 MINS)**

TIME SPENT LISTENING TO  
MUSIC STREAMING SERVICES



**1H 28M**

YEAR-ON-YEAR CHANGE  
**-3.3% (-3 MINS)**

TIME SPENT LISTENING  
TO BROADCAST RADIO



**0H 52M**

YEAR-ON-YEAR CHANGE  
**-10.3% (-6 MINS)**

TIME SPENT LISTENING  
TO PODCASTS



**0H 52M**

YEAR-ON-YEAR CHANGE  
**-3.7% (-2 MINS)**

TIME SPENT USING  
A GAMES CONSOLE



**1H 05M**

YEAR-ON-YEAR CHANGE  
**-7.1% (-5 MINS)**

13

**SOURCE:** GWI (Q4 2022). FIGURES REPRESENT THE FINDINGS OF A BROAD GLOBAL SURVEY OF INTERNET USERS AGED 16 TO 64. SEE [GWI.COM](http://GWI.COM) FOR FULL DETAILS. **NOTES:** CONSUMPTION OF DIFFERENT MEDIA MAY OCCUR CONCURRENTLY. TELEVISION INCLUDES BOTH LINEAR (BROADCAST AND CABLE) TELEVISION AND CONTENT DELIVERED VIA STREAMING AND VIDEO-ON-DEMAND SERVICES. PRESS INCLUDES BOTH ONLINE AND PHYSICAL PRINT MEDIA. BROADCAST RADIO DOES NOT INCLUDE INTERNET RADIO. **COMPARABILITY:** GWI HAS INTRODUCED A REVISED SURVEY METHODOLOGY THAT RESULTED IN A DECLINE IN VALUES FOR A WIDE VARIETY OF DATA POINTS, SO DATA POINTS ON THIS CHART MAY NOT BE DIRECTLY COMPARABLE WITH SIMILAR DATA POINTS PUBLISHED IN PREVIOUS REPORTS.

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social** Meltwater

# Ubiquitous connection



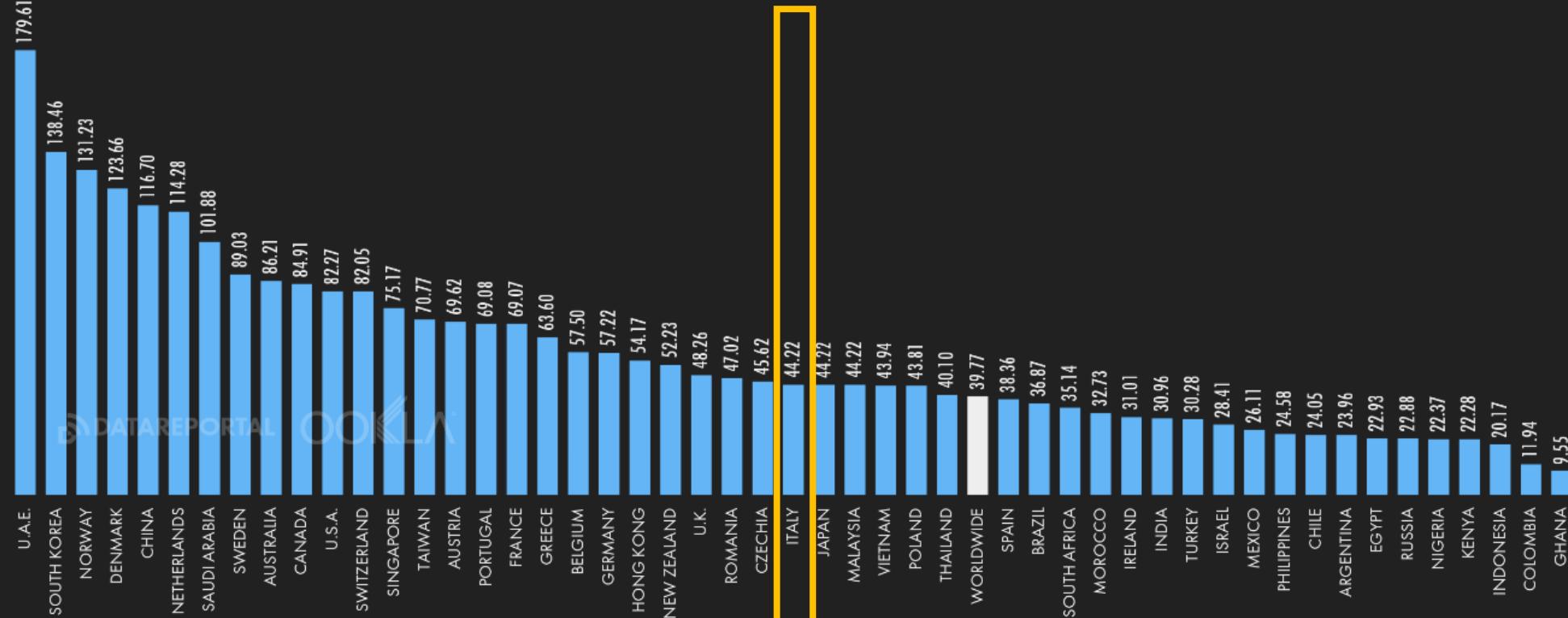
APR  
2023

# MOBILE INTERNET CONNECTION SPEEDS

MEDIAN DOWNLOAD SPEEDS FOR MOBILE INTERNET CONNECTIONS (IN MBPS)



GLOBAL OVERVIEW



37

SOURCE: OOKLA. NOTE: FIGURES REPRESENT MEDIAN DOWNLOAD SPEEDS (IN MEGABITS PER SECOND) IN FEBRUARY 2023.

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37 of 305



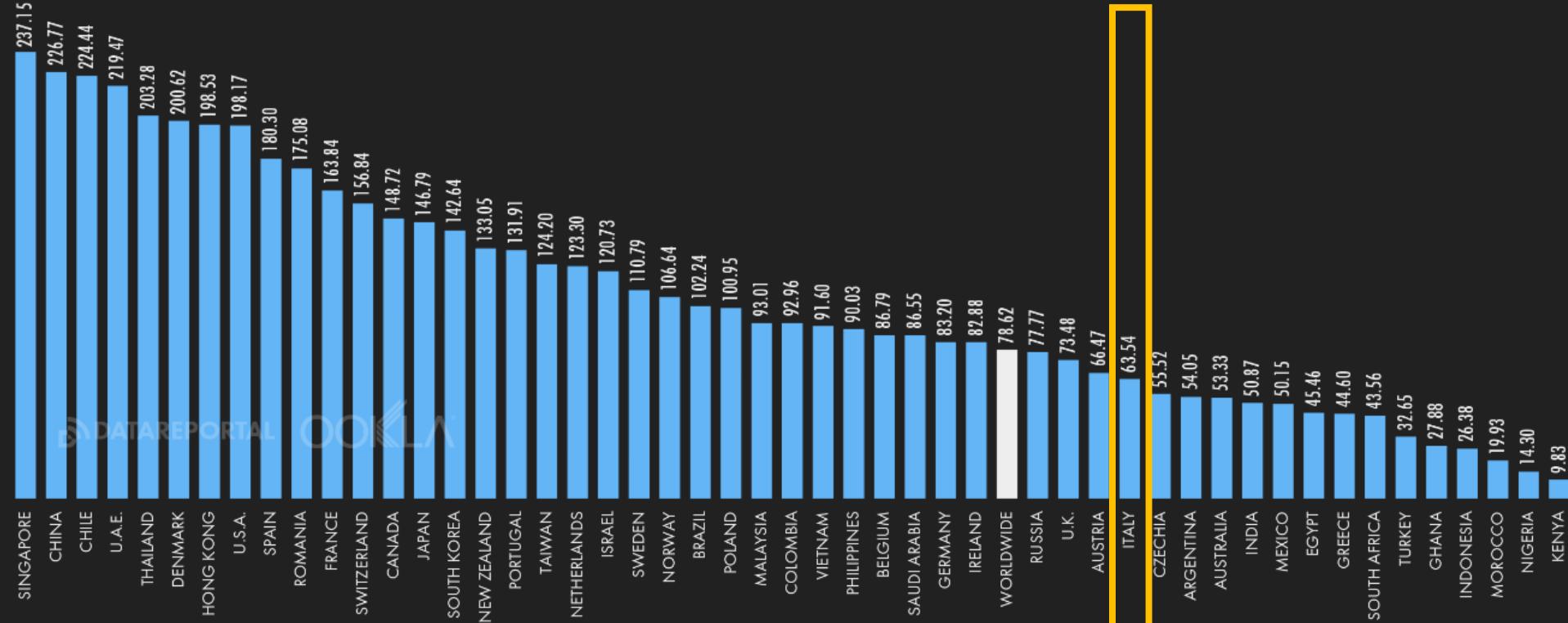
English

...

APR  
2023

# FIXED INTERNET CONNECTION SPEEDS

MEDIAN DOWNLOAD SPEEDS FOR FIXED INTERNET CONNECTIONS (IN MBPS)



39

SOURCE: OOKLA. NOTE: FIGURES REPRESENT MEDIAN DOWNLOAD SPEEDS (IN MEGABITS PER SECOND) IN FEBRUARY 2023.

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2023

# TOP WEBSITES: SIMILARWEB RANKING

RANKING OF THE MOST VISITED WEBSITES ACCORDING TO **SIMILARWEB**, BASED ON TOTAL WEBSITE TRAFFIC IN **MARCH 2023**



#	WEBSITE	TIME PER VISIT	PAGES PER VISIT	#	WEBSITE	TIME PER VISIT	PAGES PER VISIT
01	GOOGLE.COM	10M 54S	8.67	11	XVIDEOS.COM	8M 27S	8.96
02	YOUTUBE.COM	20M 30S	11.08	12	PORNHUB.COM	7M 42S	8.52
03	FACEBOOK.COM	10M 27S	8.43	13	AMAZON.COM	7M 09S	9.11
04	TWITTER.COM	10M 35S	9.90	14	XNXX.COM	6M 35S	11.02
05	INSTAGRAM.COM	8M 15S	10.96	15	LIVE.COM	8M 06S	8.61
06	BAIDU.COM	5M 19S	7.90	16	TIKTOK.COM	3M 29S	7.20
07	WIKIPEDIA.ORG	3M 54S	3.00	17	DOCOMO.NE.JP	5M 54S	4.74
08	YANDEX.RU	9M 34S	9.29	18	YAHOO.CO.JP	9M 13S	6.26
09	YAHOO.COM	8M 23S	5.68	19	LINKEDIN.COM	7M 39S	7.86
10	WHATSAPP.COM	17M 15S	1.66	20	REDDIT.COM	8M 39S	6.19

50

**SOURCE:** SIMILARWEB. FIGURES REPRESENT TRAFFIC VALUES FOR MARCH 2023. **ADVISORY:** SOME WEBSITES FEATURED IN THIS RANKING MAY CONTAIN ADULT CONTENT. PLEASE USE CAUTION WHEN VISITING UNKNOWN DOMAINS.

APR  
2023

# SHARE OF SEARCH ENGINE REFERRALS

PERCENTAGE OF TOTAL WEB TRAFFIC REFERRED BY SEARCH ENGINES THAT ORIGINATED FROM EACH SEARCH SERVICE



GOOGLE



**93.17%**

YEAR-ON-YEAR CHANGE  
**+1.8% (+161 BPS)**

BING



**2.88%**

YEAR-ON-YEAR CHANGE  
**-7.1% (-22 BPS)**

YAHOO!



**1.12%**

YEAR-ON-YEAR CHANGE  
**-23.8% (-35 BPS)**

YANDEX



**1.03%**

YEAR-ON-YEAR CHANGE  
**-3.7% (-4 BPS)**

DUCKDUCKGO



**0.52%**

YEAR-ON-YEAR CHANGE  
**-24.6% (-17 BPS)**

BAIDU



**0.42%**

YEAR-ON-YEAR CHANGE  
**-72.0% (-108 BPS)**

NAVER



**0.23%**

YEAR-ON-YEAR CHANGE  
**+91.7% (+11 BPS)**

CÓCCÓC



**0.21%**

YEAR-ON-YEAR CHANGE  
**+250% (+15 BPS)**

ECOSIA



**0.09%**

YEAR-ON-YEAR CHANGE  
**-25.0% (-3 BPS)**

OTHERS



**0.33%**

YEAR-ON-YEAR CHANGE  
**+6.5% (+2 BPS)**

51

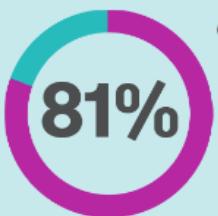
SOURCE: STATCOUNTER. NOTES: FIGURES REPRESENT THE NUMBER OF PAGE VIEW REFERRALS ORIGINATING FROM EACH SERVICE AS A PERCENTAGE OF TOTAL PAGE VIEW REFERRALS ORIGINATING FROM SEARCH ENGINES IN MARCH 2023. PERCENTAGE CHANGE VALUES REPRESENT RELATIVE YEAR-ON-YEAR CHANGE (I.E. AN INCREASE OF 20% FROM A STARTING 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.

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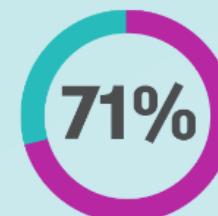
## Meltwater Insights

# The State of Social Media

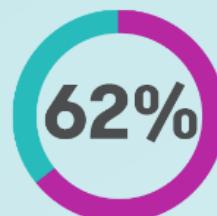
How social media marketing is developing, according to more than 1,700 marketing and communications professionals



of organizations  
**use social  
media to  
raise brand  
awareness.**



of B2C organizations  
will **engage  
in influencer  
marketing** in 2023.



of organizations  
with social listening  
programs use  
them to **better  
understand their  
audiences.**

Marketers aiming to reach new and existing audiences need insight into what consumers are saying about their brand, competitors, and industry. Meltwater's **social listening solutions** let organizations discover and understand the billions of social conversations happening online to identify the messages that resonate with audiences.

Creating great influencer campaigns starts with finding the voices your audience already values. Meltwater's **influencer marketing solution** scores influencers based on engagement rates and audience quality to help marketers understand their "true" reach.

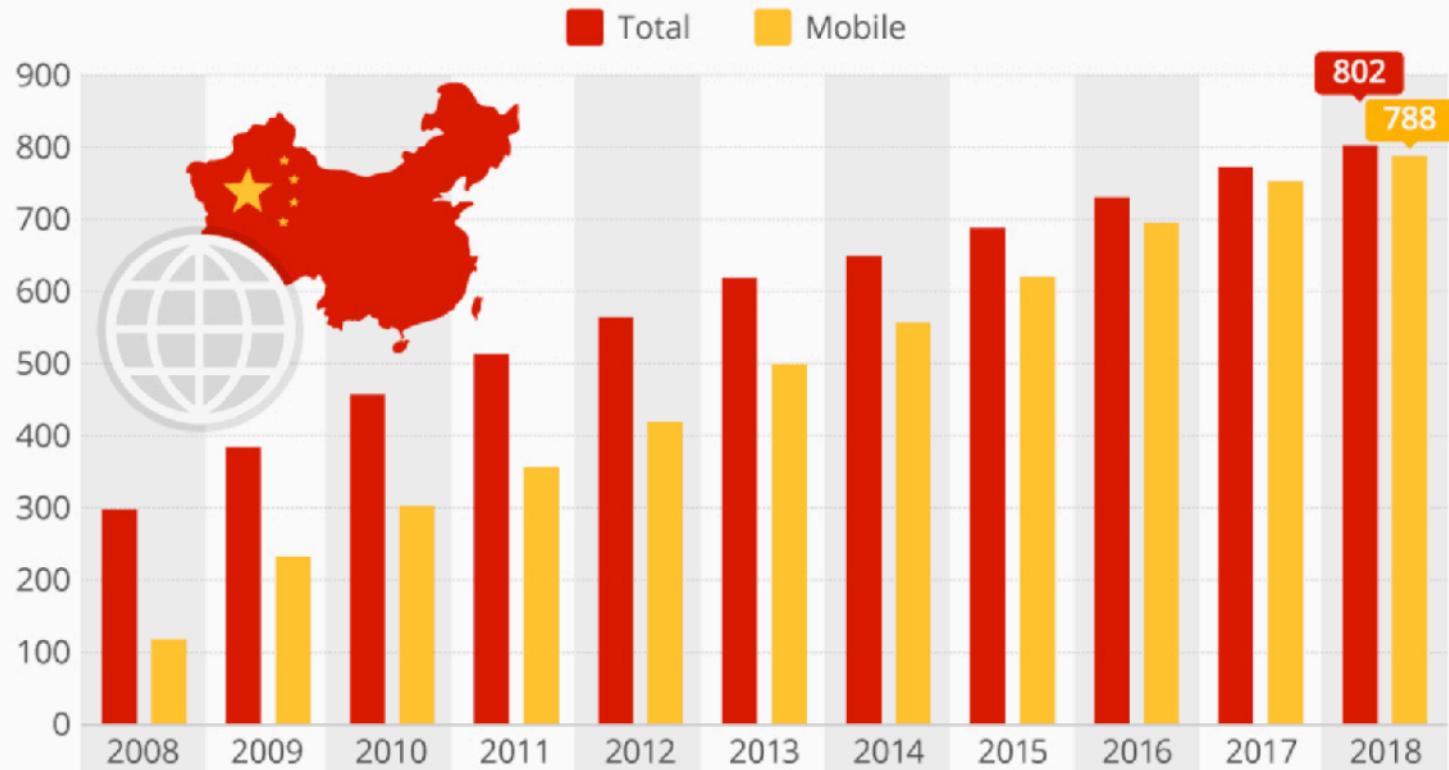
Marketers can't just rely on consumers' demographic information anymore. You need real consumer insights. Online audiences are organized around shared ideas, values, and behaviors. Meltwater's **consumer insights solution** can help you research the different communities within your broader target audiences to target them more effectively.



Learn more about the how marketing teams are investing in social with Meltwater's **The State of Social Media 2023**.

## 98% Of Chinese Internet Users Are Mobile

Number of internet users in China (millions)



@StatistaCharts

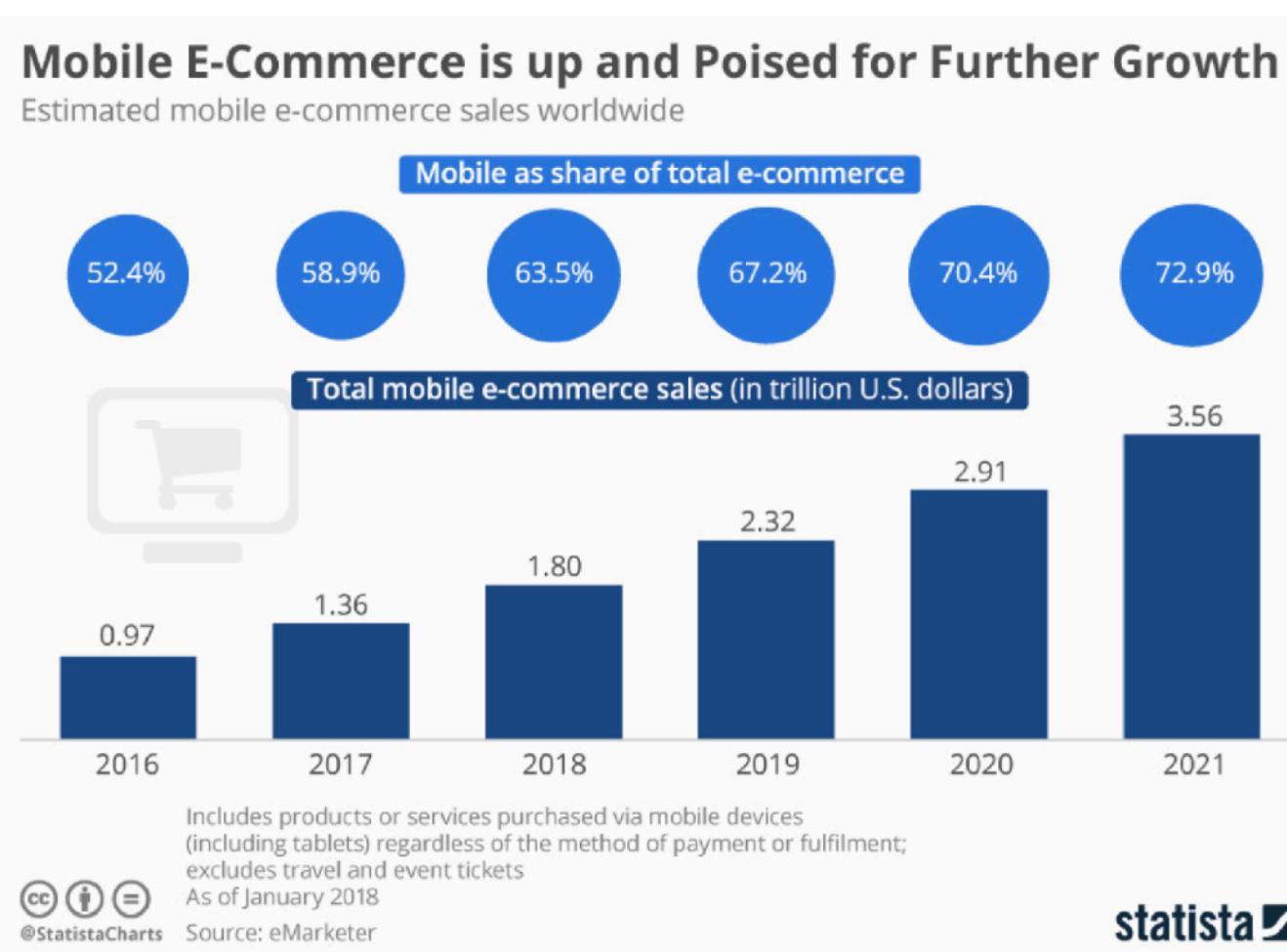
Source: CNNIC

statista

# Mobile first

- Mobile devices are the main way for people to be online

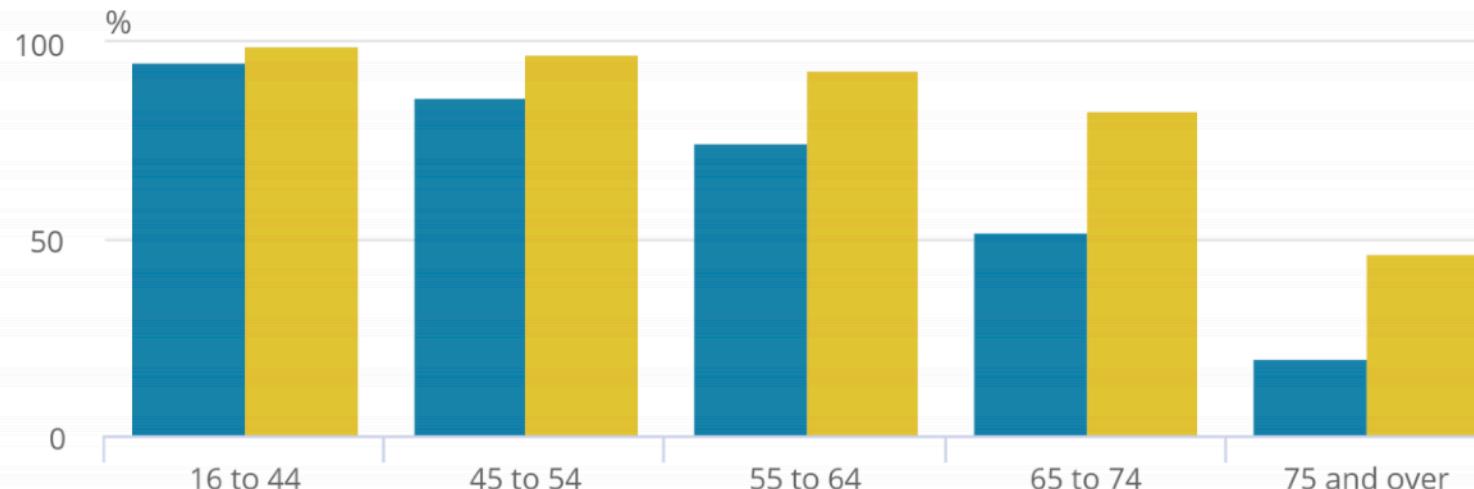
•



# What demographics?

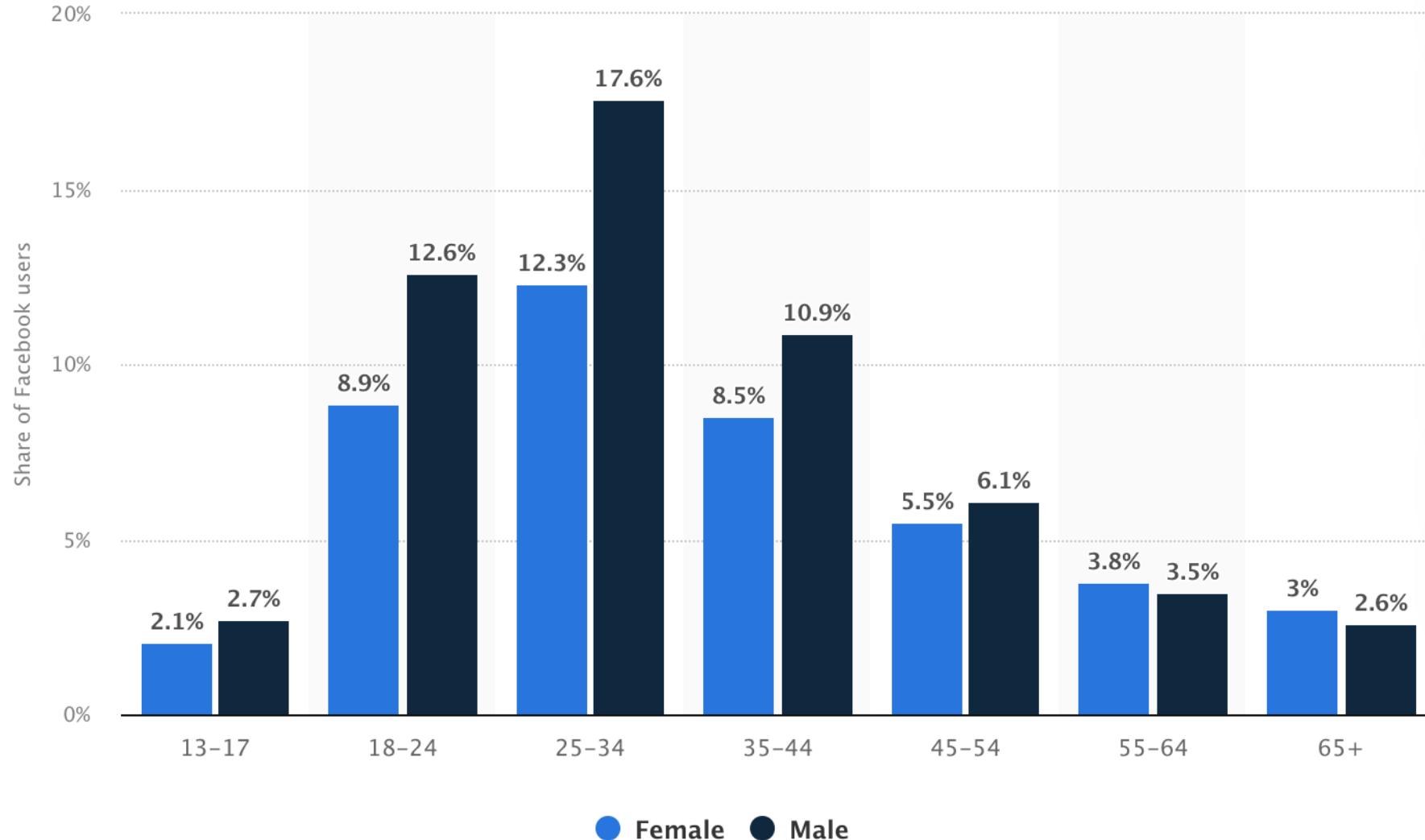
Figure 1: Since 2011, the 65 to 74 years age group has seen the largest increase in recent internet use

Recent internet users, UK, 2011 and 2019

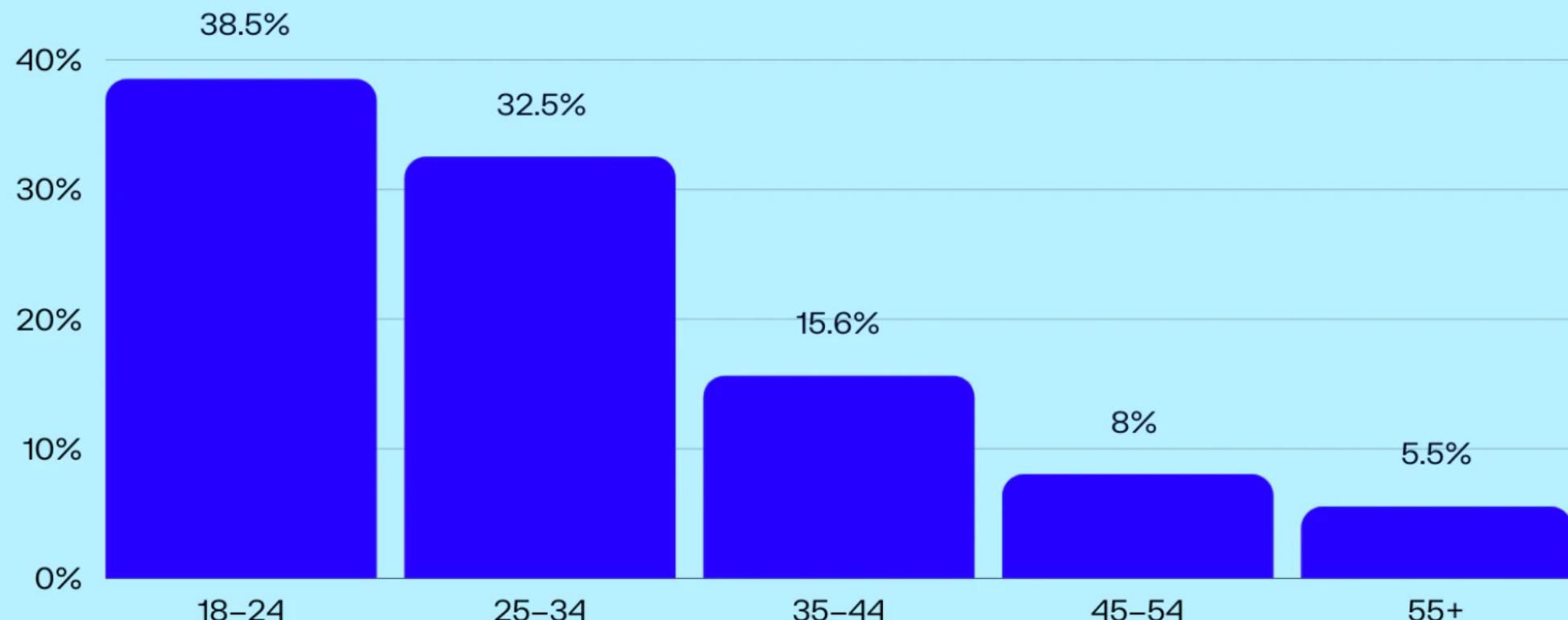


Who are you designing your technologies for?

# Distribution of Facebook users worldwide as of January 2023, |



## TikTok Users by Age (2023)



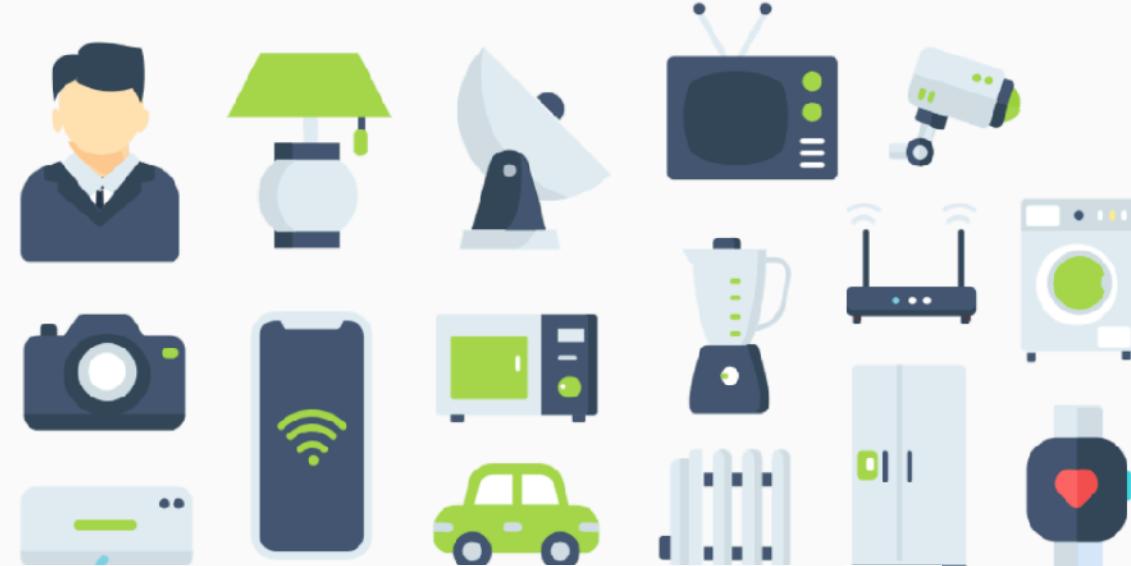
Source: DataReportal

OBERLO

# The Devices in the Loop



15  
**DEVICES**  
PER PERSON



... which means 15 connected devices per person.

<https://www.reply.com/en/topics/internet-of-things/the-evolution-of-the-consumer-internet-of-things>

# IoT space



# Scannable

- Another way in into the IoT



-  Access control
-  Physical Access
-  Cashless payments
-  Targeted marketing
-  Loyalty programs
-  Location-based services
-  Mobile payments
-  In-store marketing

# Some People Laugh at Wearables



Some People Laughed at PC & Internet

# Why should everything be connected?



<https://www.youtube.com/watch?v=TuD3IerTOms>

1960s



where you could count the things  
that you owned that had a motor.

2020



can count the things that you own  
that connect to the Internet

# A button for a barber shop?



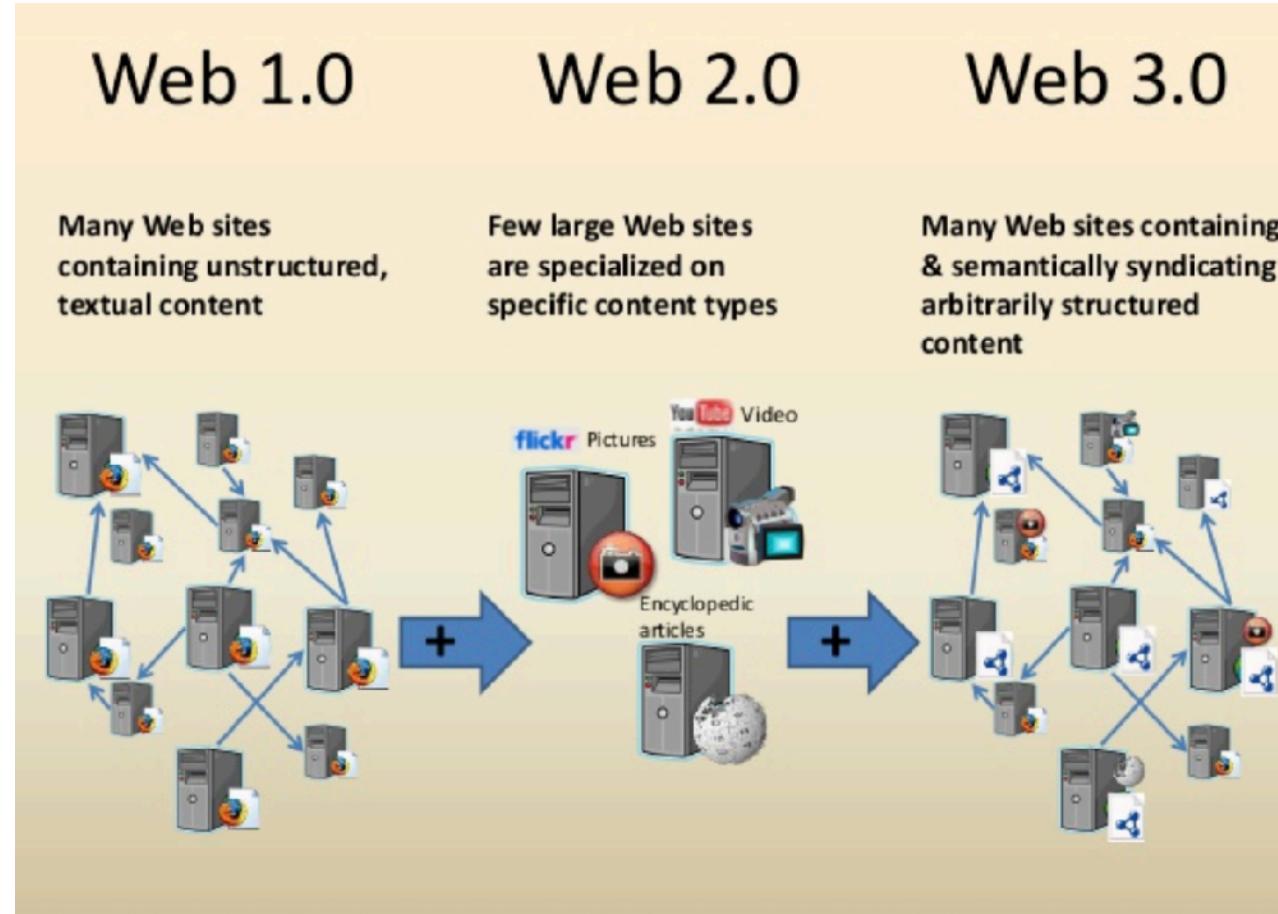
# The Data



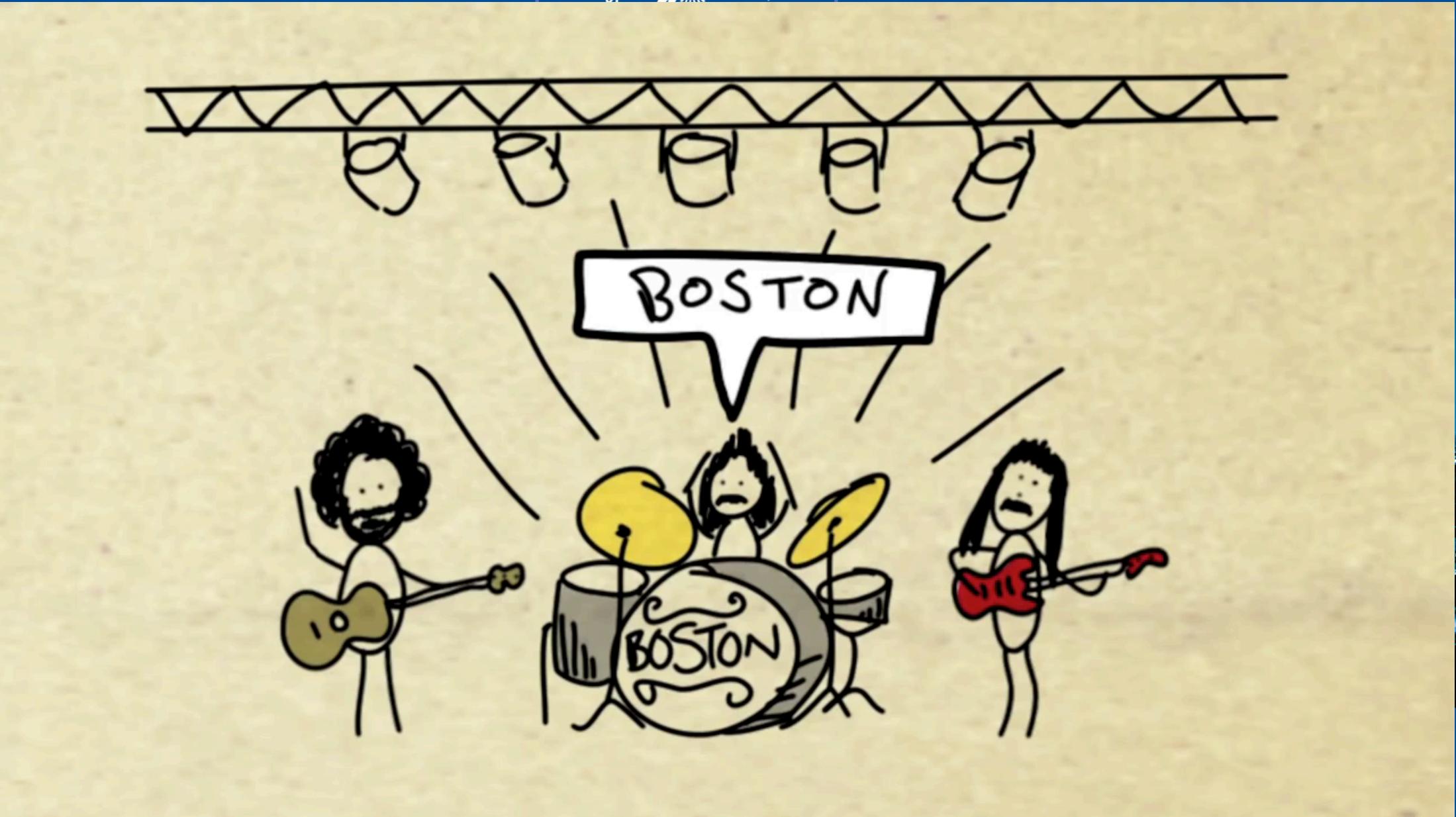
# What is the web of data?

- Our interaction with the web has changed
  - People look for answers not for web sites
  - Websites/Apps often collect and reuse pieces of information from other sources

# The evolution of the web



[https://www.slideshare.net/soeren1611/introduction-to-the-data-web-dbpedia-and-the-lifecycle-of-linked-data?qid=2a793203-a1bf-4145-a6a4-975e2fcea88b&v=&b=&from\\_search=4](https://www.slideshare.net/soeren1611/introduction-to-the-data-web-dbpedia-and-the-lifecycle-of-linked-data?qid=2a793203-a1bf-4145-a6a4-975e2fcea88b&v=&b=&from_search=4)

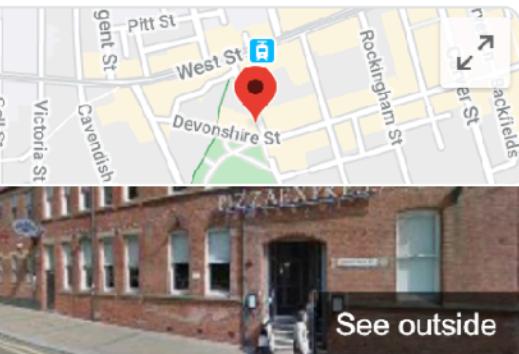


Google

albert einstein



See photos



See outside

## Pizza Express

Website

Directions

Save

4.1 ★★★★☆ 181 Google reviews

££ · Pizza restaurant

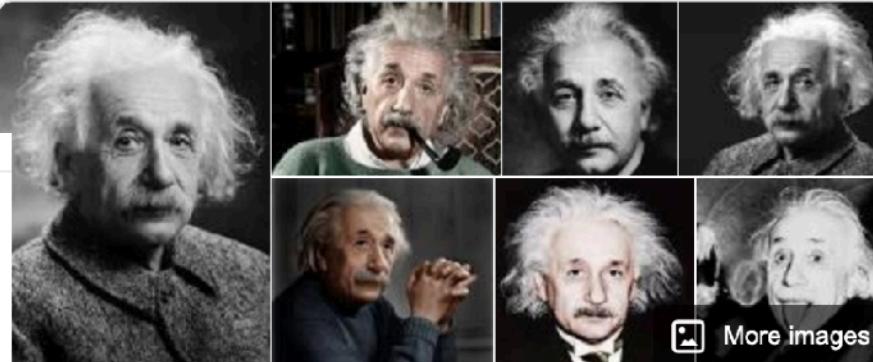
Chain pizzeria where chefs in striped t-shirts toss handmade p  
in a relaxed space.

1 min walk from [Forum Kitchen + Bar](#)

**Address:** 124 Devonshire St, Sheffield City Centre, Sheffield S  
7SF

Google

pizza express division street



## Albert Einstein

Theoretical physicist

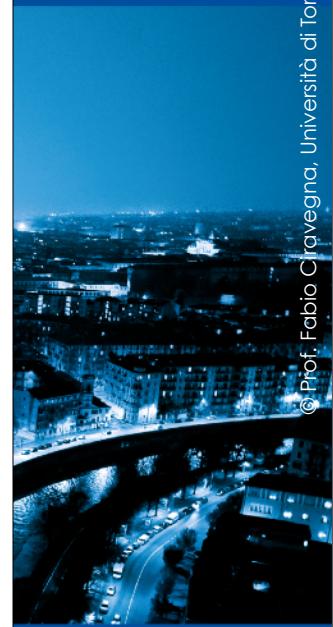
Albert Einstein was a German-born theoretical physicist who developed the theory of relativity, one of the two pillars of modern physics. His work is also known for its influence on the philosophy of science. [Wikipedia](#)

**Born:** 14 March 1879, [Ulm, Germany](#)

**Died:** 18 April 1955, [Princeton Medical Center, New Jersey, United States](#)



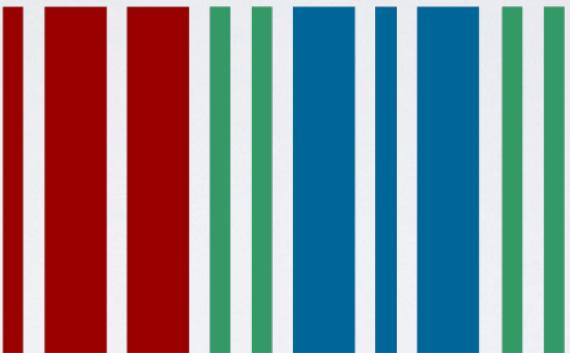
# Schema.org



<http://www.slideshare.net/anjeve/wikidata>

# Wikidata

The free knowledge base that anyone can edit



Anja Jentzsch - @anjeve

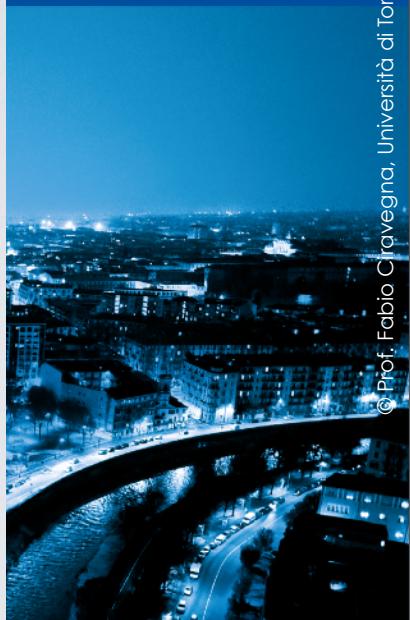
Hasso Plattner Institute, Potsdam, Germany



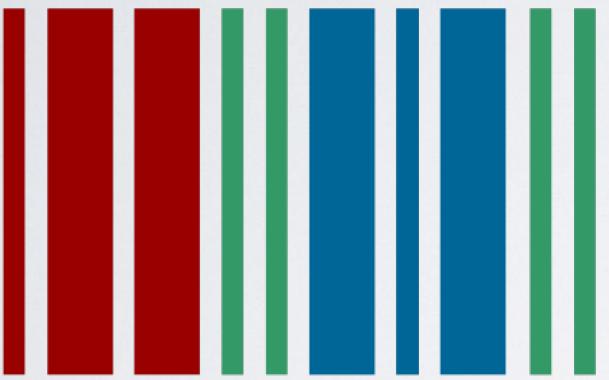
Open Data Lecture, HTW Berlin

2015/01/12

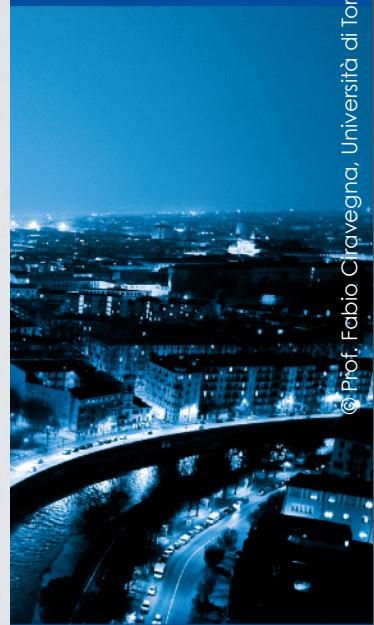
Imagine a world in which every  
single human being can freely  
share in the sum of all  
knowledge.



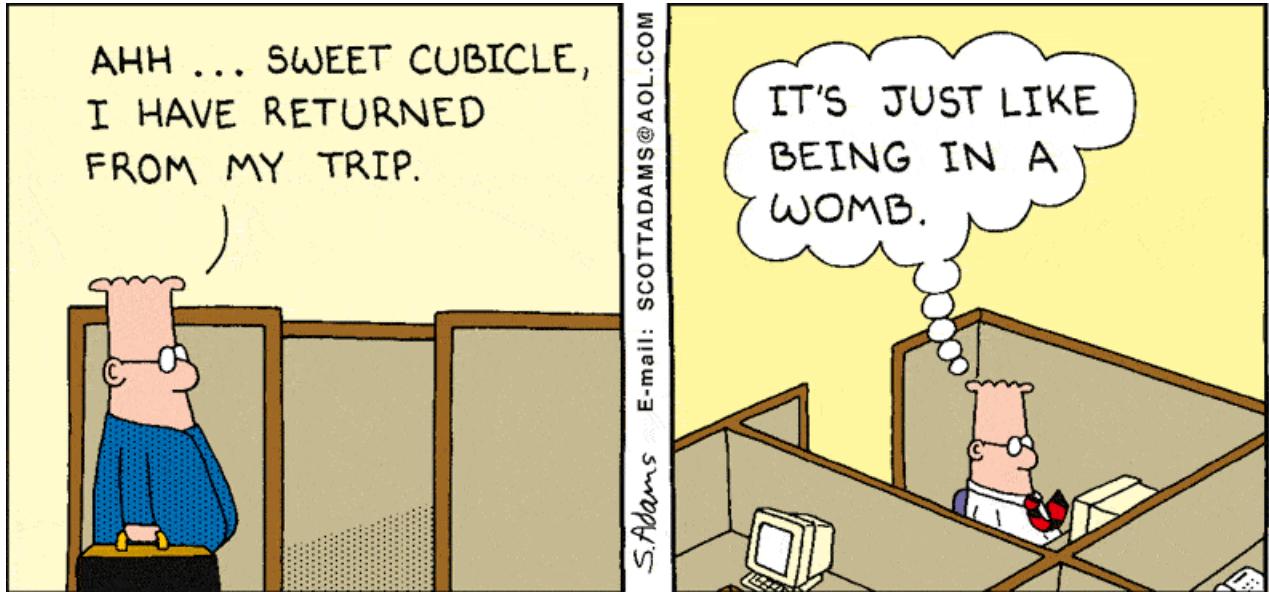
© Prof. Fabio Cravegno, Università di Torino



# Wikidata to the rescue!



# What about you?



<http://forums.sailinganarchy.com/index.php?/topic/195334-dilbert/>

If you think your job is to be a developer in your cubicle,  
Think again

# Questions?

