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COM3504-COM6504 The Intelligent Web

Professor Fabio Ciravegna

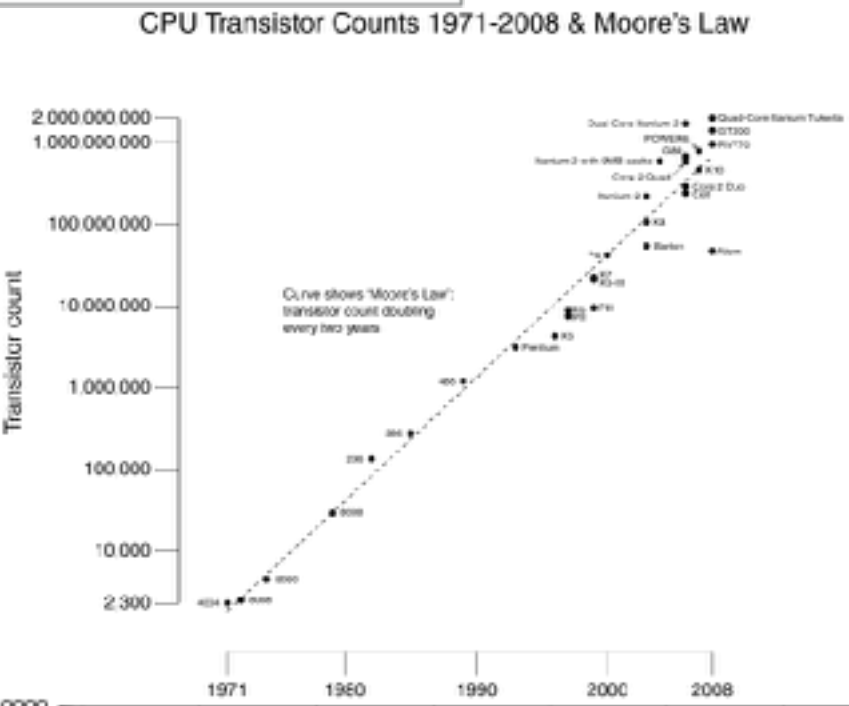
Organisations, Information and Knowledge Group
Department of Computer Science
University of Sheffield
f.ciravegna@shef.ac.uk

Lab Assistants: Temitope Adeosun and Abiel Tomas Parra Hernandez

Let's start…

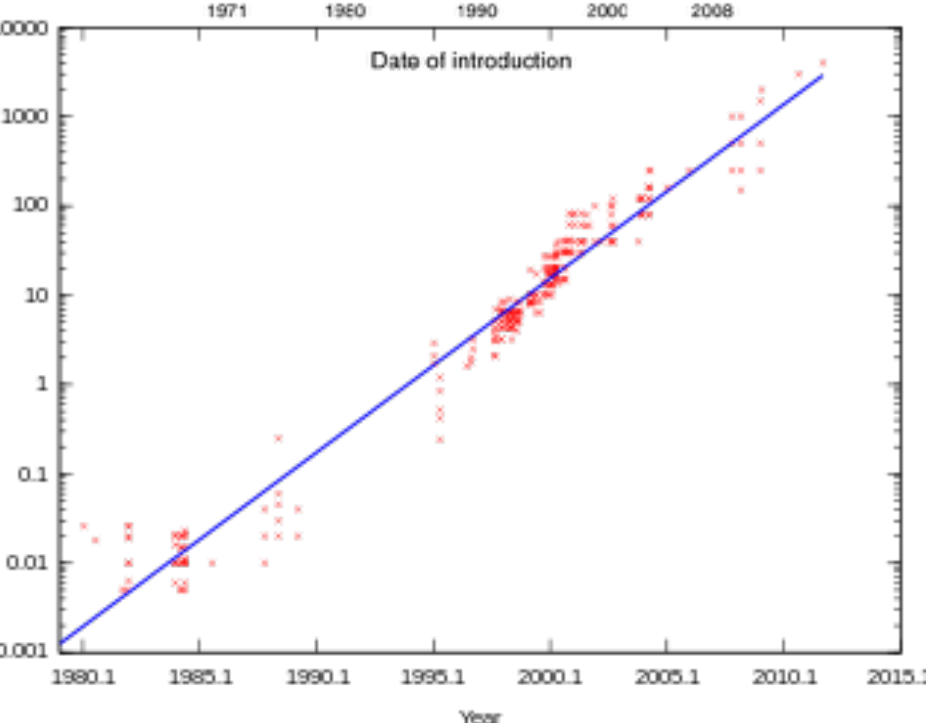
- What is the Web and where did it come from?
- How can we use the Web in an intelligent way?
- And what is more important:
  - How is it the future Web going to be?

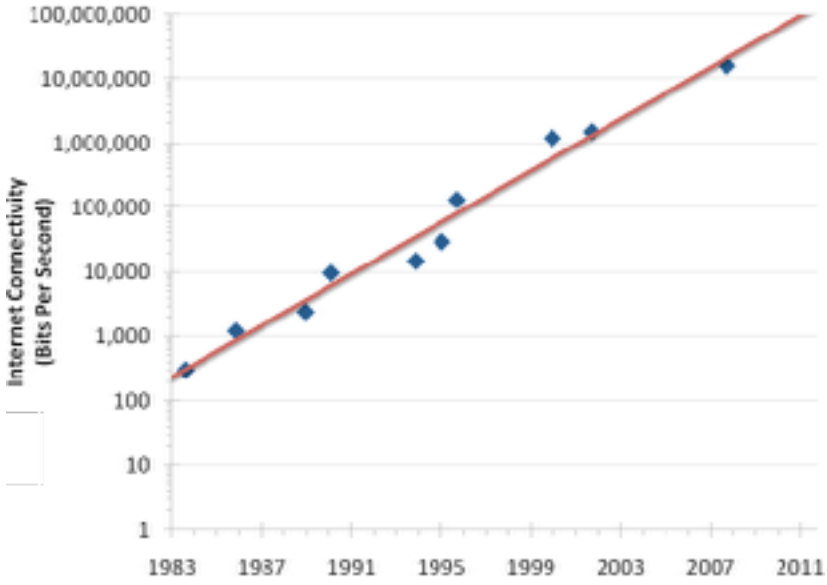
Moore's, Nielsen's and Disk Space Law



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

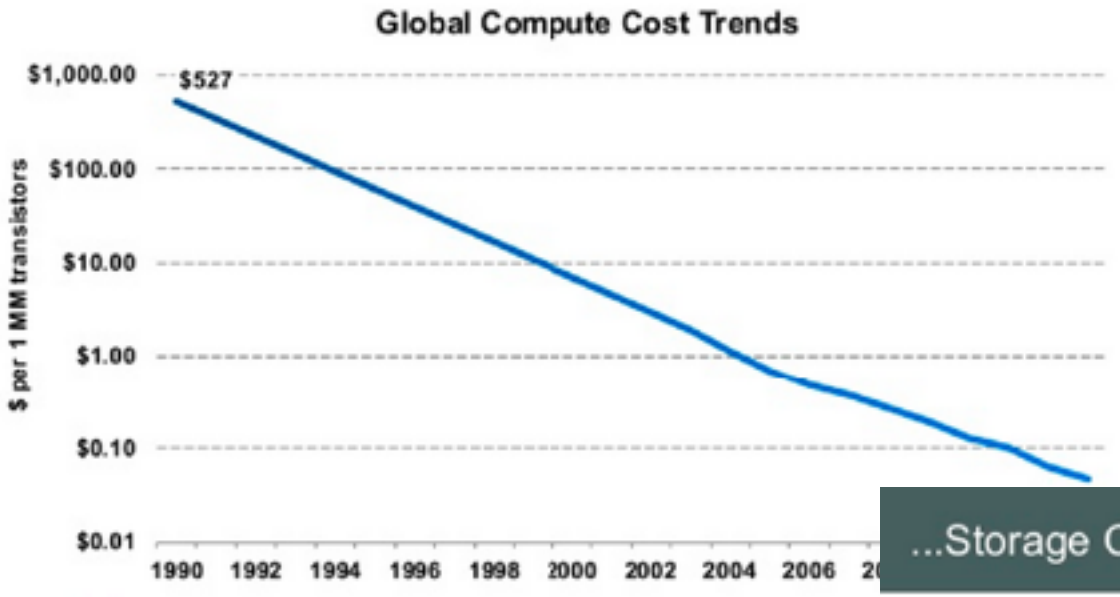
The same computer power, speed of broadband and disk storage capability will cost half the current price in 2 years' time (and basically will use half space)





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

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

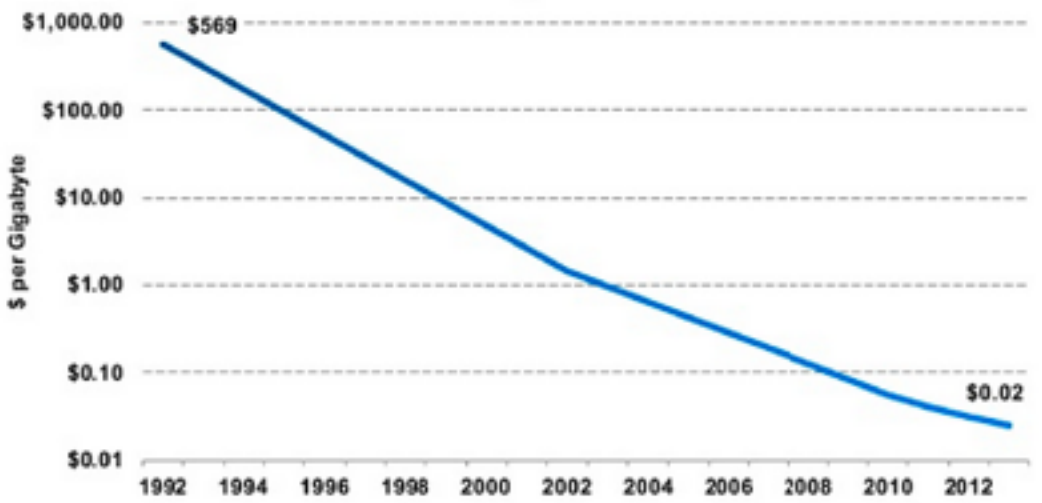


@KPCB Note: Y-axis on graph is logarithmic scale. Source: John Hagel, Deloitte, 5/14

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

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

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



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

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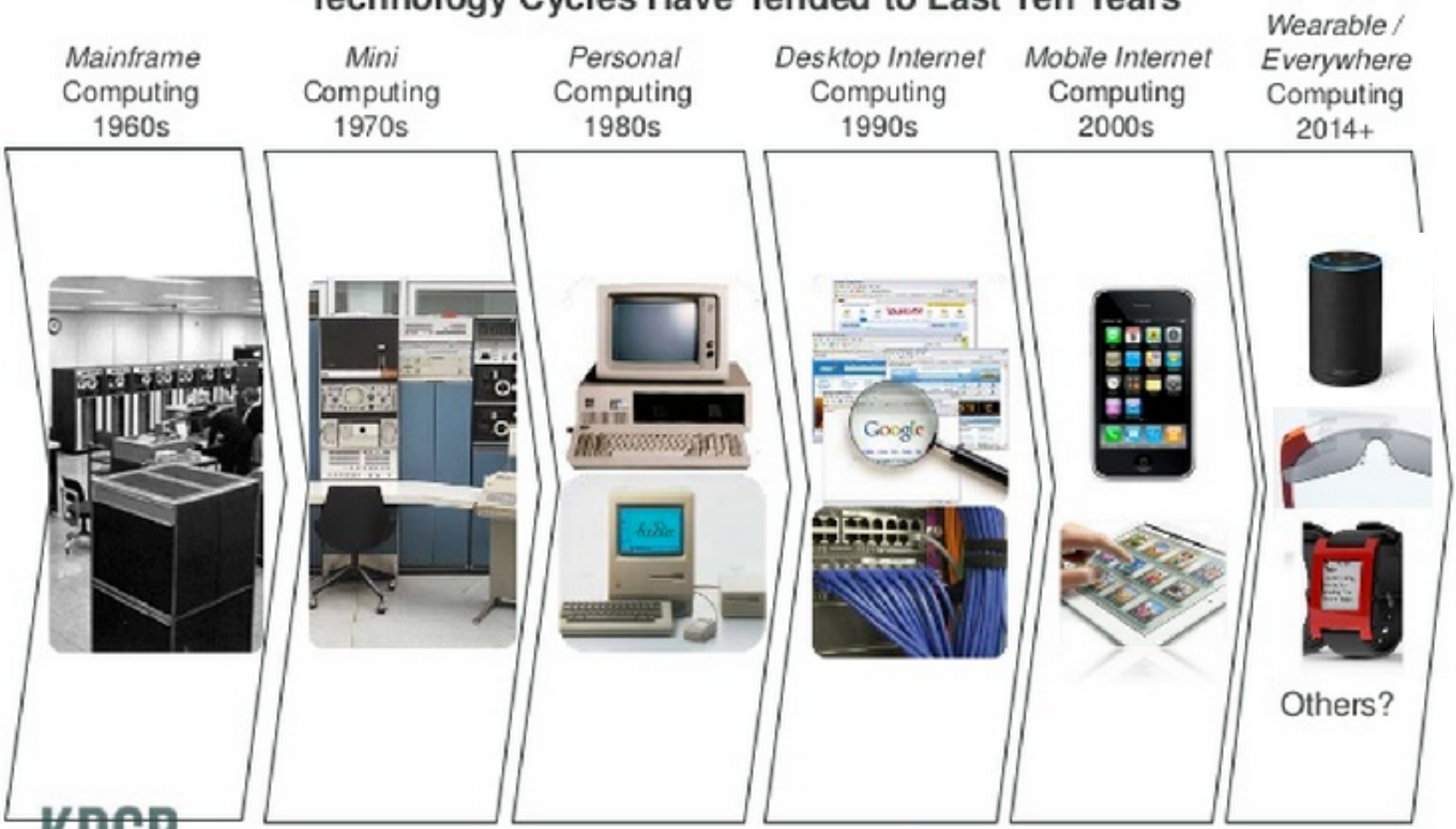
Then by applying linearly these laws

	2018	2023	2028	2033
Networks	50M	300M	1.6G	9.6G
Computers	£600	£3,600	£19,200	£115,200*
Disks	1T	6T	32T	192T

* the equivalent to 192 computers

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



KPCB

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

http://www.slideshare.net/kleinerperkins/kpcb-internet-trends-2013

Mobile Devices

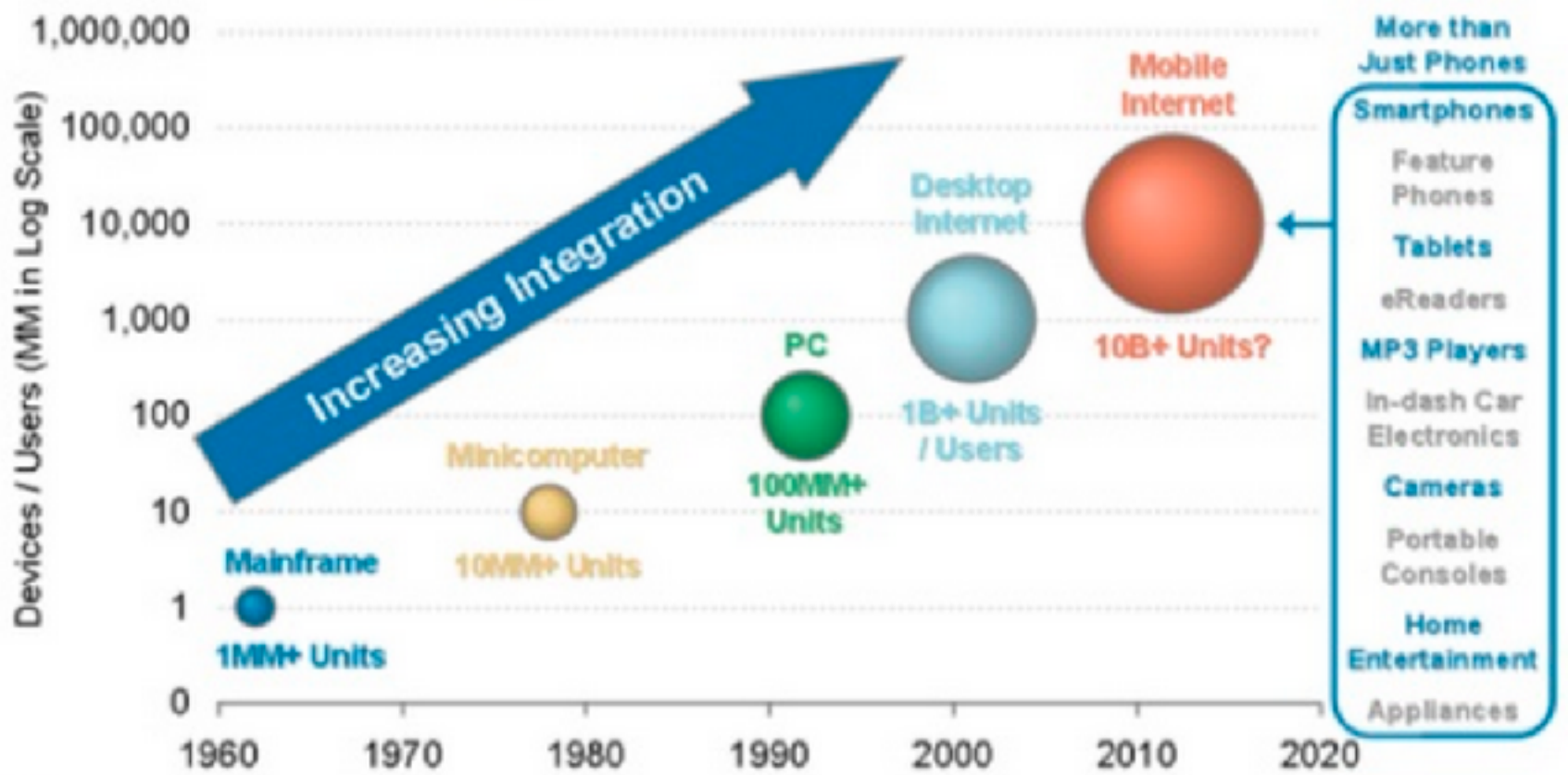
Source: https://www.slideshare.net/sqrajper/mobile-computing-24722802

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



@KPCB Source: Morgan Stanley Mobile Internet Report (12/09)

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

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The shape of the things to come

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Imagine a world where...

- Digital technologies assist a person 24/7
- Where we can understand their e.g. behaviour
- It is a world where we can:
  - Provide tailored advices based on what they are doing
  - Optimise urban environments based on human behaviour
- Two things will happen
  - The world as we know it will change radically
  - The type of expertise we need will change radically

Well that world is here now.
The issue is not IF it will come into existence. The issue is WHEN

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The Digital World

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

- Development and use of Digital Technologies
- Study of their impact on the society
- Covering:
  - Digital economy
    - The use of ICT and digital technologies for innovative services and products
  - The study and contribution to the arts and humanities

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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

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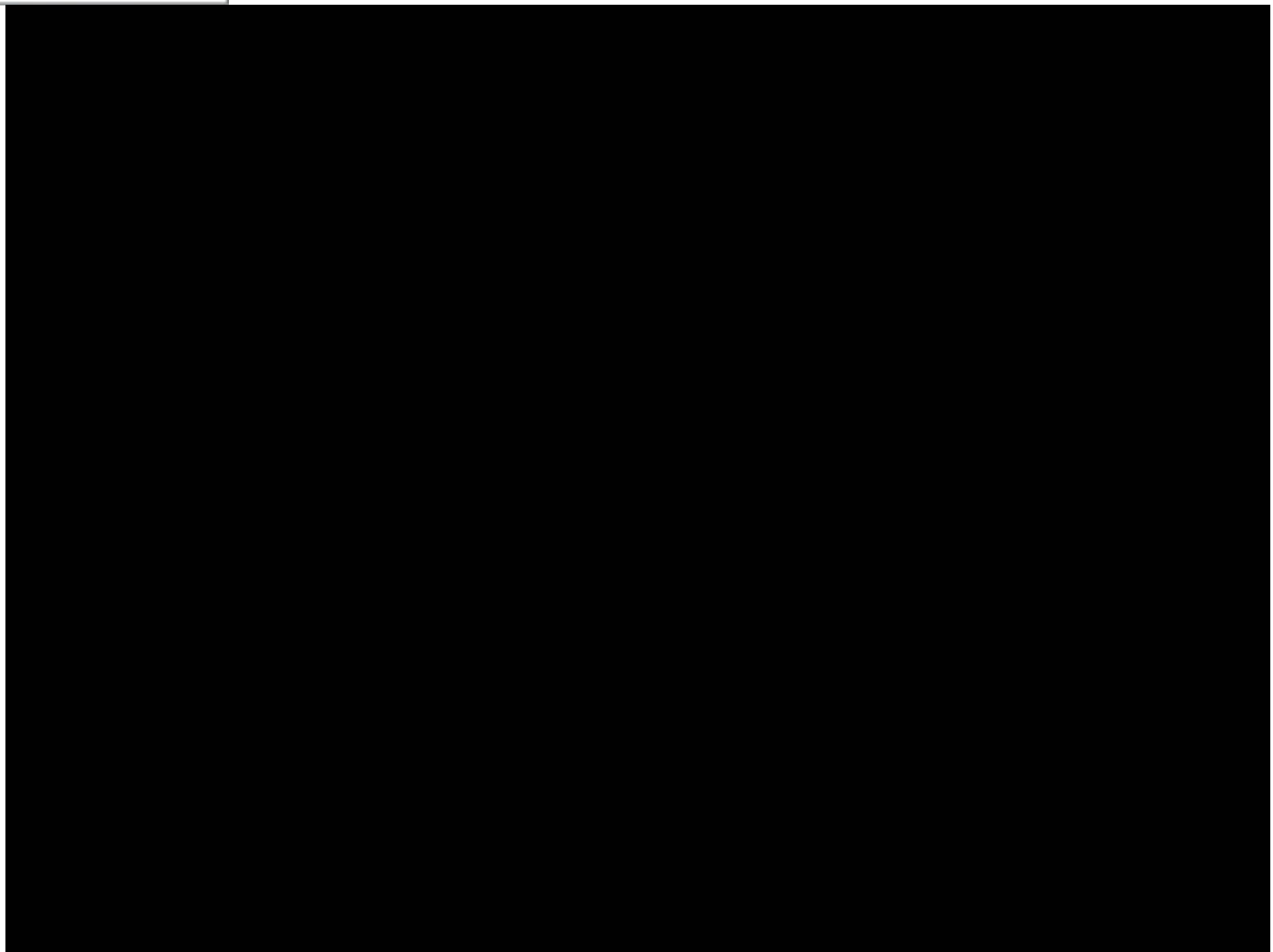
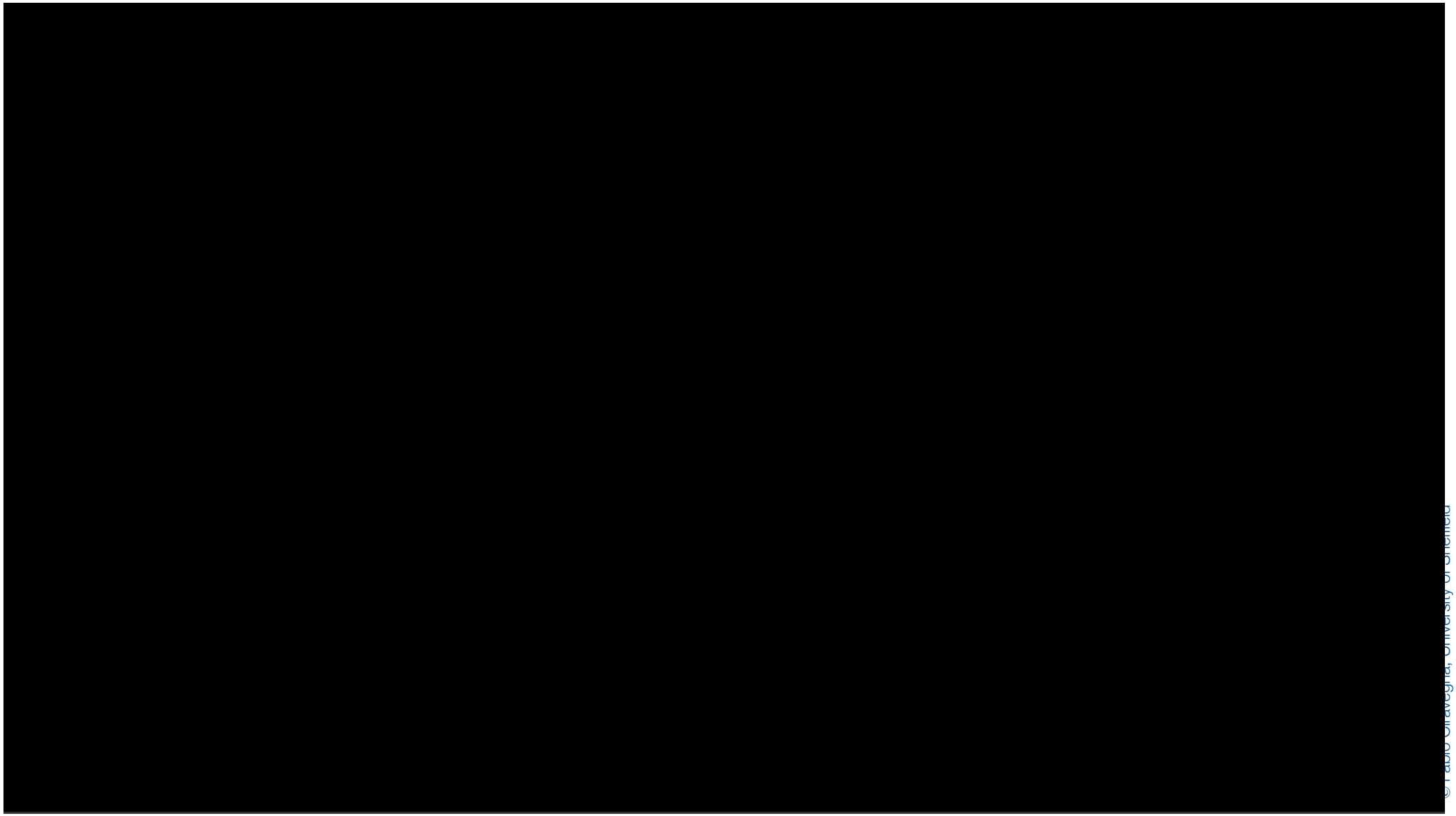
No longer office machines



in my eyes (not an office machine)



What is important here is the idea, not the actual product (which failed from a commercial point of view btw)

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amazon echo

amazon.com/echo

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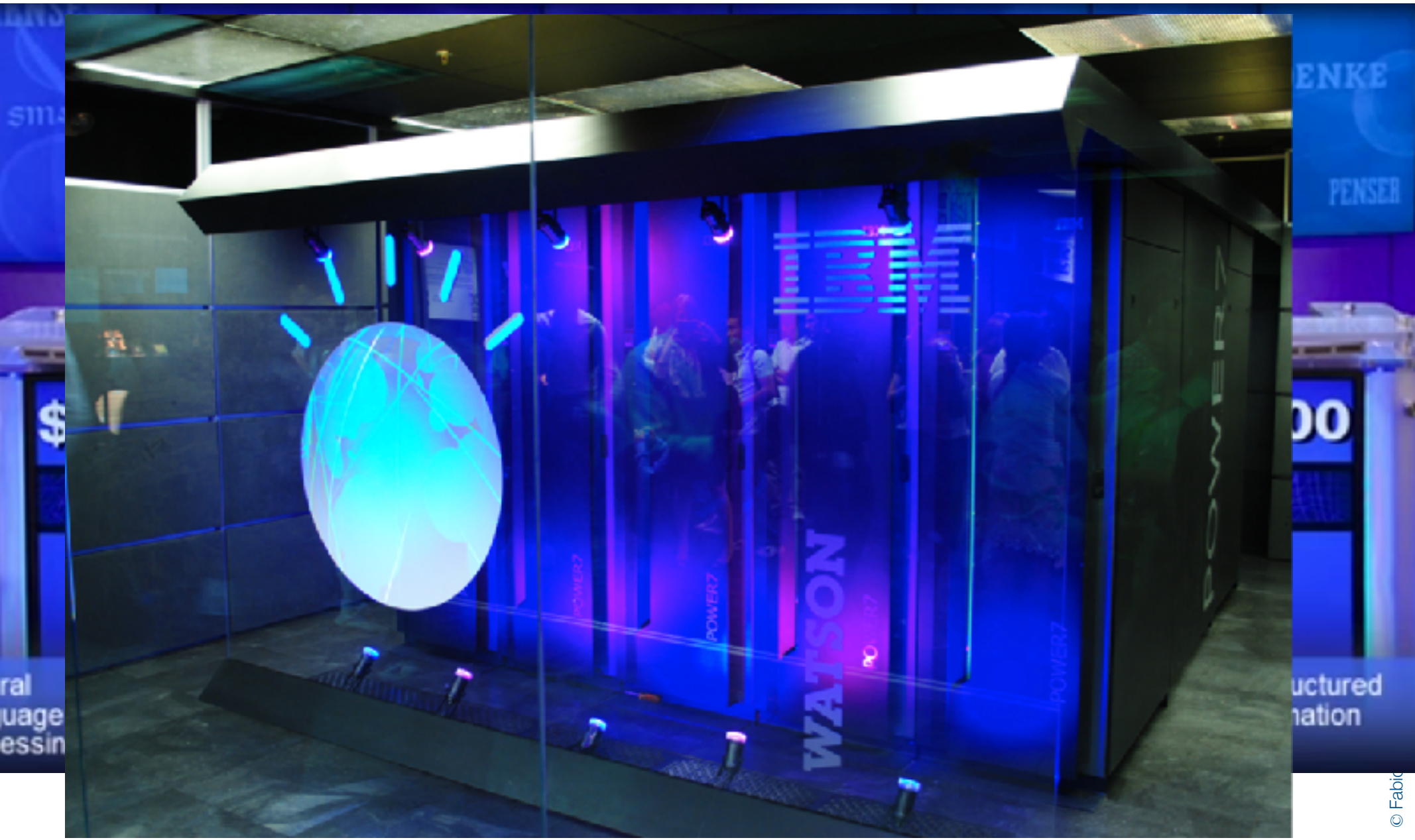
Watson



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It is about Health

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Self driving cars

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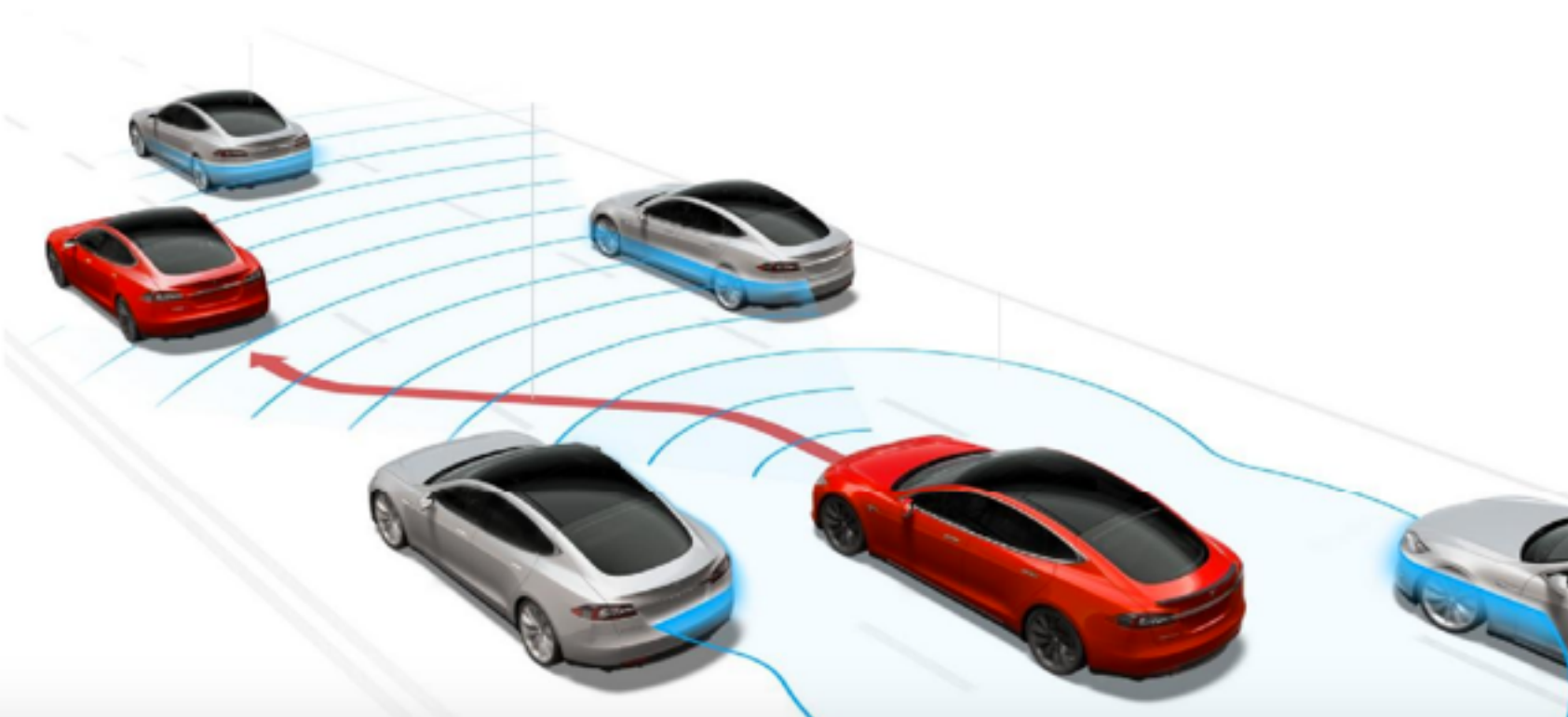
It is about the Economy

MICRO PAYMENT PAYMENTSYSTEMS

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



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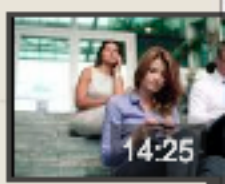
Humans Need Not Apply

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



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.

https://thetyee.ca/News/2013/03/06/Horse-Dung-Big-Shift/

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

Law of Accelerating Returns

- According to Ray Kurzweil's "Law of Accelerating Returns," technological change is exponential rather than linear;

- "we won't experience 100 years of progress in the twentyfirst century- it will be more like 20,000 years of progress (at today's rate)."
  - Kurzweil predicts that the equivalent of 4,000 years of technological advancement will occur during the first two decades of the twenty-first century.

Web diary: The World in 2025?

http://webdiary.com.au/cms/?q=node/2635

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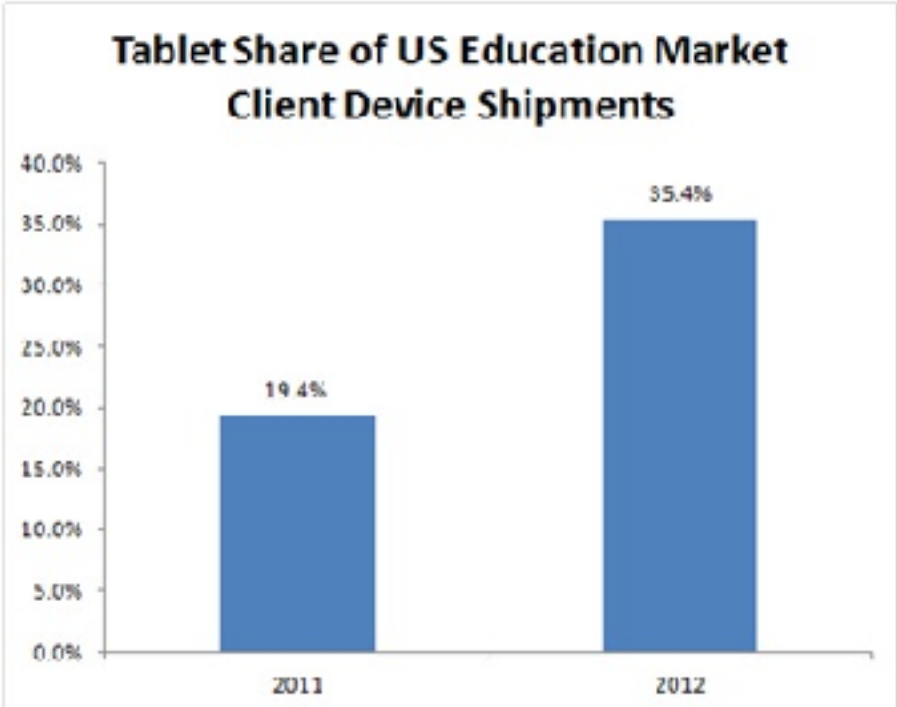
It is about Education



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

Last updated at 17:38 13 September 2007

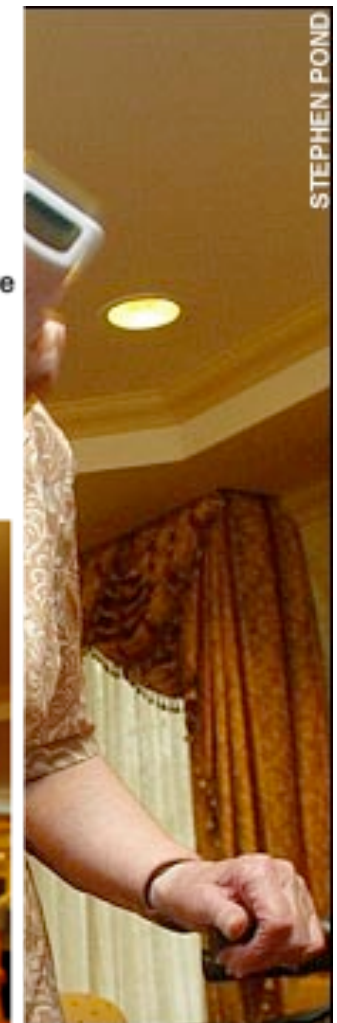
Young-at-heart pensioners bored of bowls and bridge have started videogame competitions against each other at their retirement home.

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...



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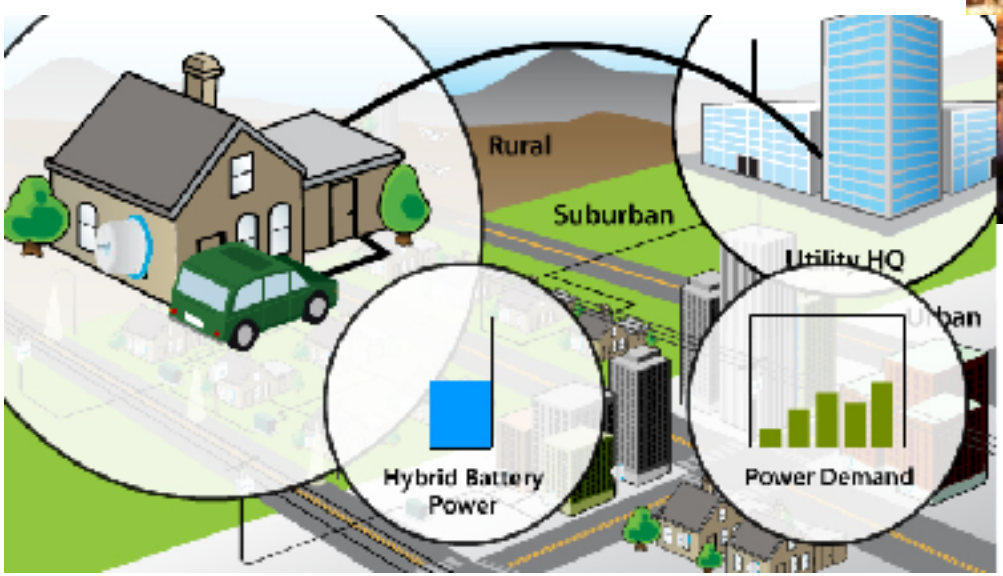
It is about Urban Spaces



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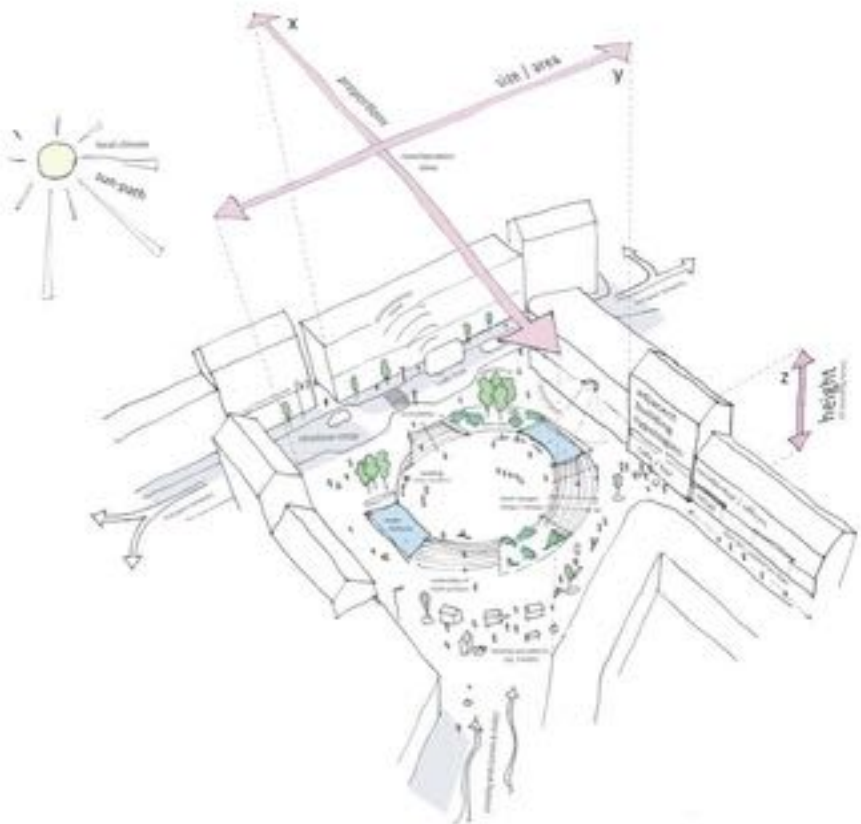
It is about Arts and Humanities



Digital Britain

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.
(…)
Broadband is at a tipping point. For many people it has become a round-the-clock reality (…) For those households who have it, broadband has become an essential utility as important as electricity, gas or voice telephony
(…)

Digital Britain, Final Report, June 2009

Digital Britain (ctd)

- *We are moving into a world where not having broadband access creates social and economic disadvantage – whether it is for children keeping up with homework with their school peers, job opportunities increasingly advertised online-only, cheap goods and services online and access to information*
  - *Being a computer user commands a wage premium of between 3 and 10%,*
  - *The financial savings flowing from an ability to use comparison websites and online-only deals are worth an average of around £23 per month, per individual.*

Digital Britain, Final Report, June 2009

Digital Britain (ctd)

- *Today almost **half the UK population** use the Internet to access information about Government or local council services, or to complete a Government transaction online. Directgov receives 14m visits each month.*
- *Some public services are already delivered almost exclusively online. (…) By 2012 (…) online will become the primary means of access, though with a safety net for those unable to access the service online.*
  - *Significant savings can be achieved through online delivery – 45% in the case of DVLA Vehicle Excise Disc issue.*

Digital Britain, Final Report, June 2009

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Connectivity

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 98.8%
  - >75 only 38.7%
  - But this will gradually disappear

Source: Office for National Statistics

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

Internet connectivity

Figure 1: Recent internet users by age group, UK, 2016

87.9% of adults in the UK have used the internet in the last 3 months

Almost all adults aged 16 to 44 years have used the internet recently...

... but just 4 in every 10 adults aged 75 and over have used the internet in the last 3 months .

Source: Office for National Statistics

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

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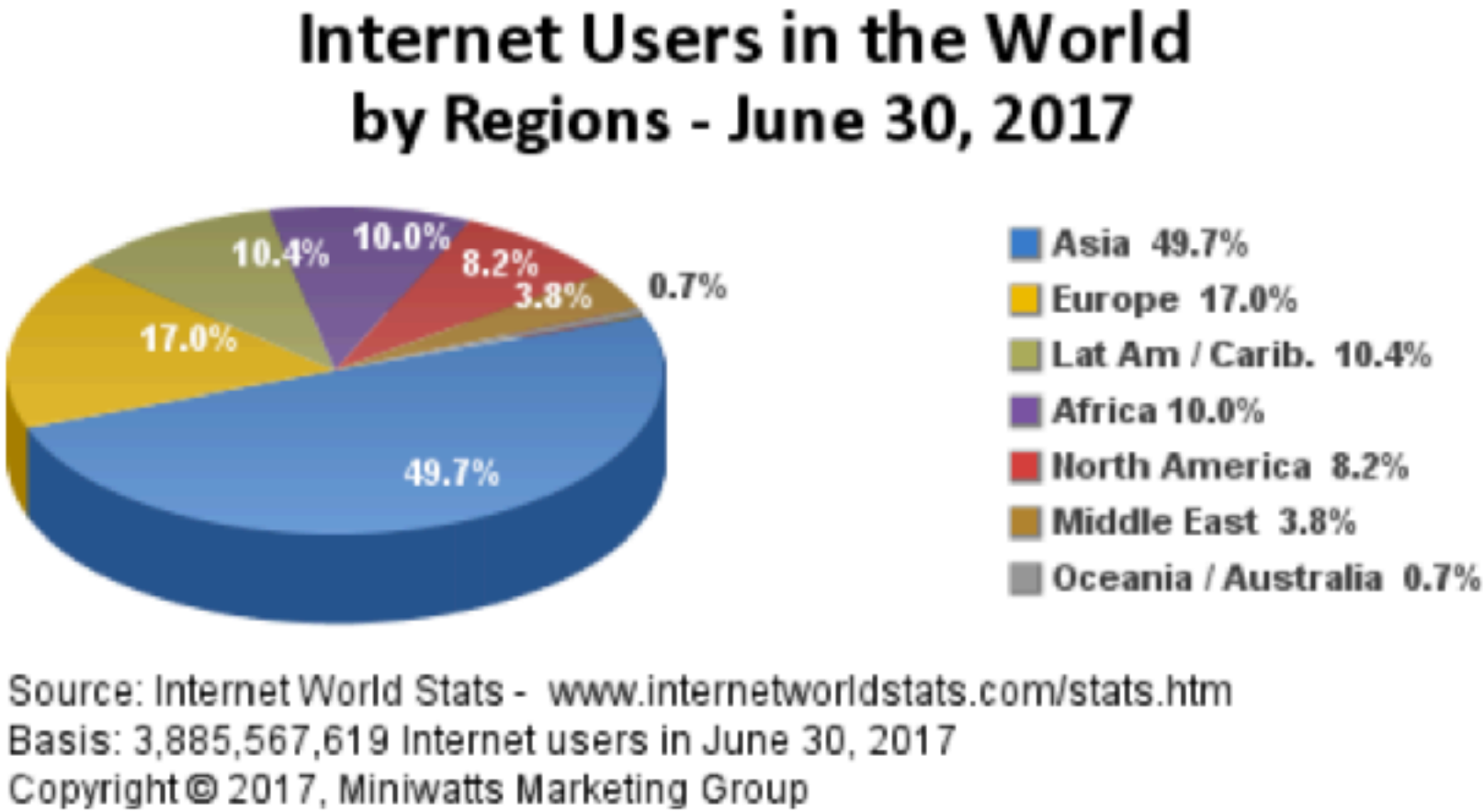
7.2.2018

http://www.internetlivestats.com/internet-users/

The number of internet users has increased tenfold from 1999 to 2013.
The first billion was reached in 2005.
The second billion in 2010.
The third billion in 2014.

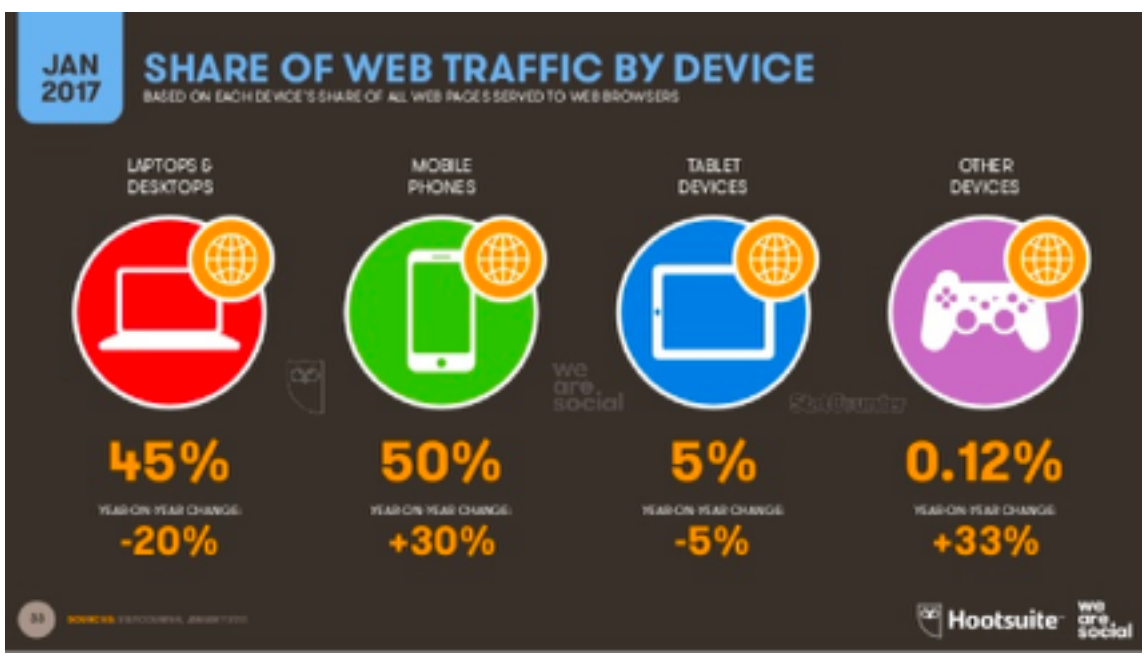
Users by Region



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

A look at the world

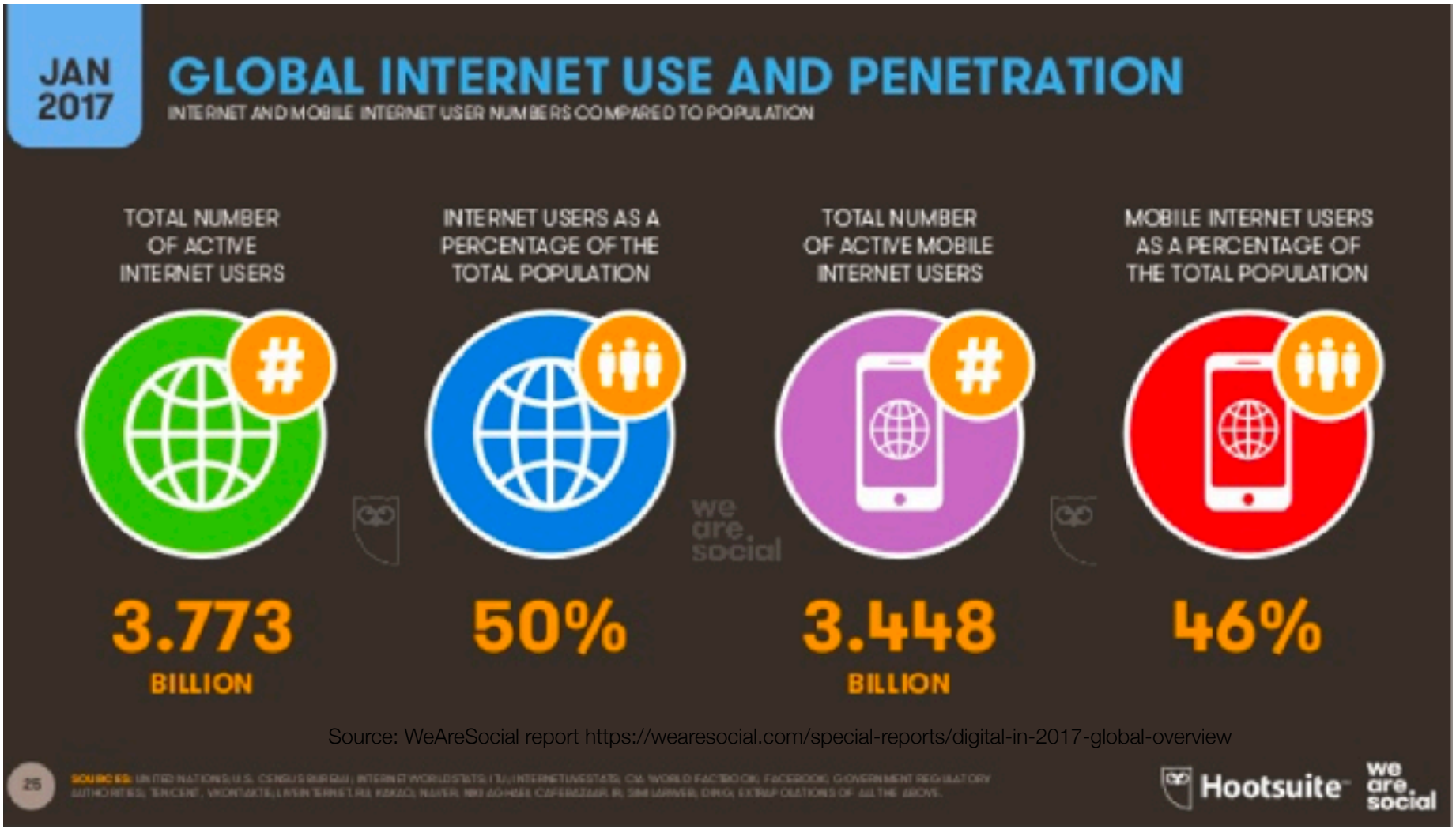
- Mobile devices are becoming the main way for people to be online
- In 2016 mobile internet access surpassed desktop access for the first time
- In 2017 mobile usage has risen of 30% whilst laptops and desktop usage has decreased of 20%



Source: WeAreSocial report https://wearesocial.com/special-reports/digital-in-2017-global-overview

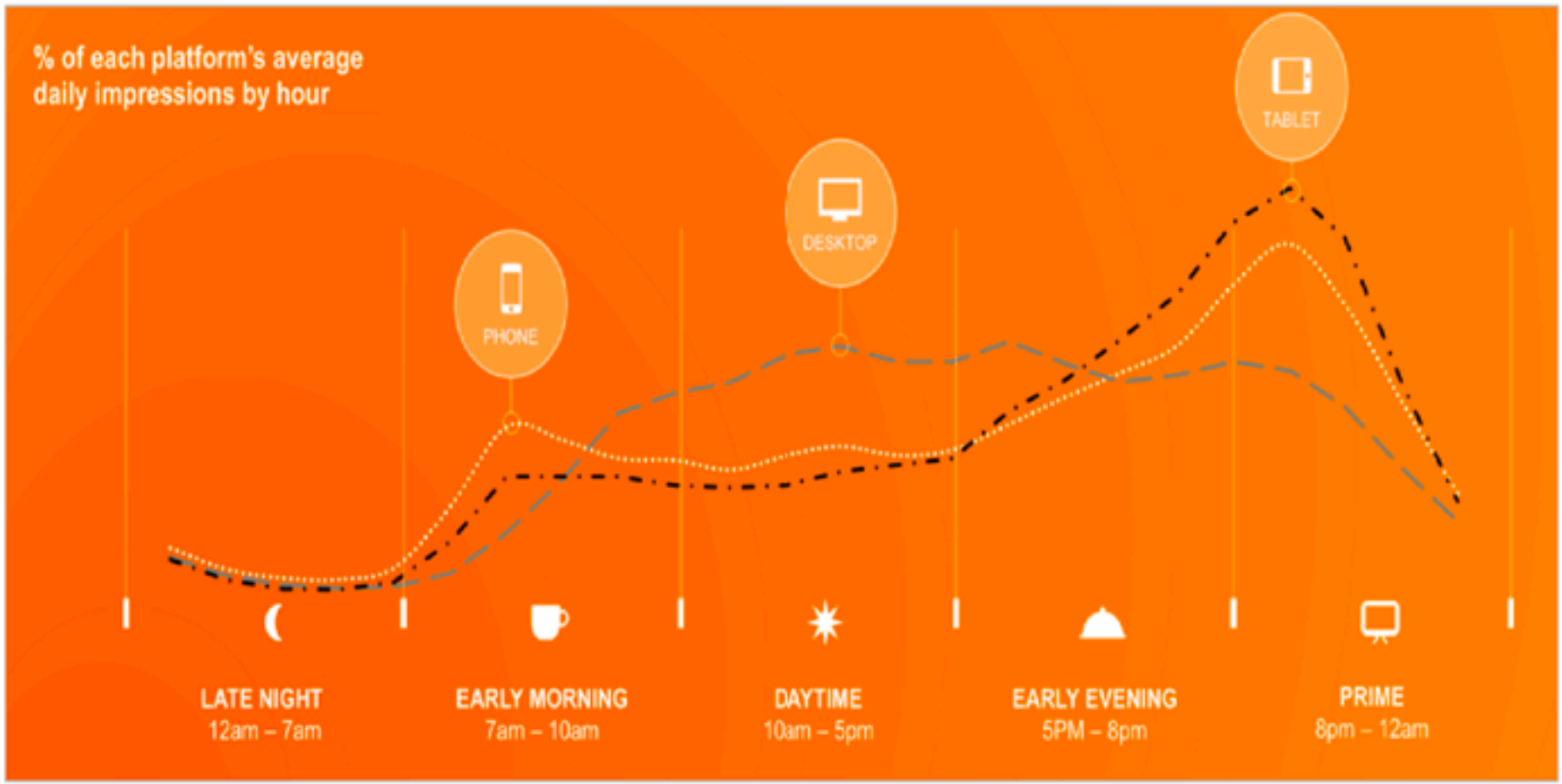
A look at the world

- The total number of active mobile internet users almost coincides with the total percentage of internet users!



Source: WeAreSocial report https://wearesocial.com/special-reports/digital-in-2017-global-overview

Ubiquitous connection



Mobile first

- People nowadays are buying more and more "mobile" devices
  - Smartphones
  - Tablets
  - Laptops

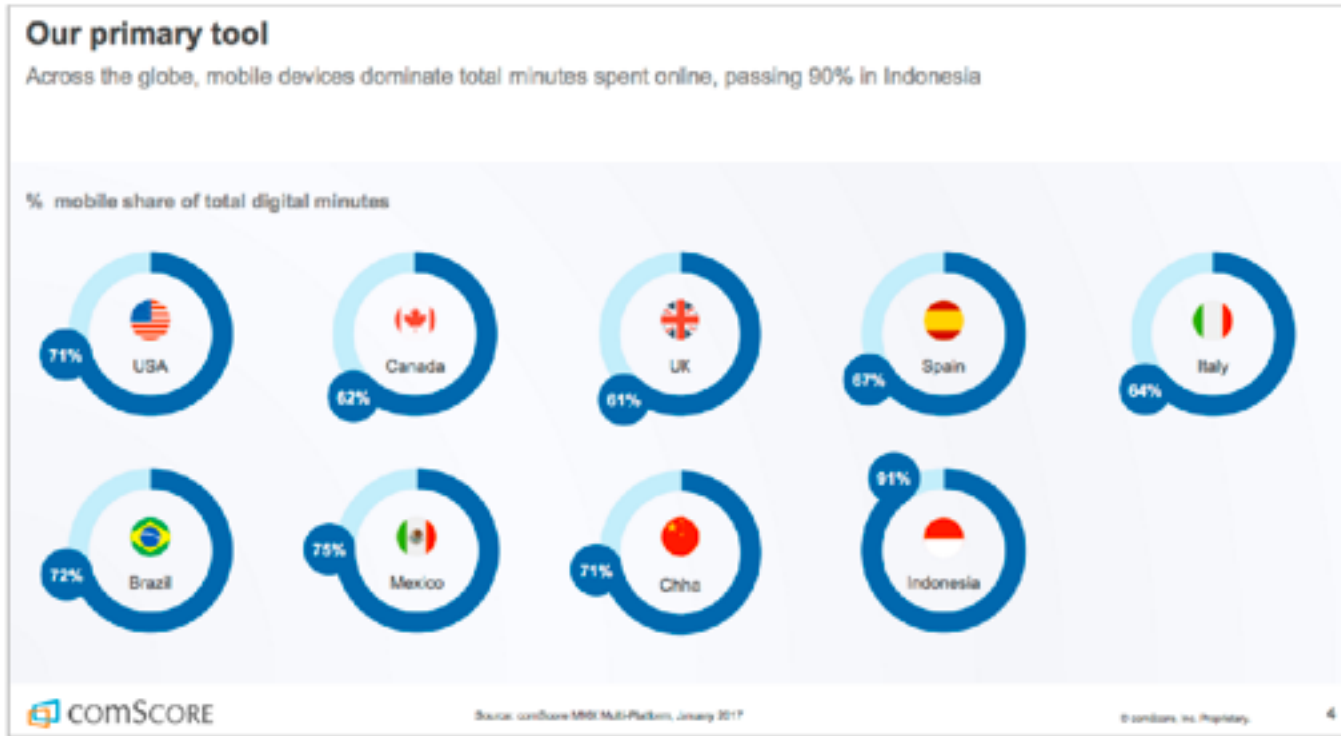
Figure 6.8 Availability and personal use of devices: 2016

Proportion (%) of all respondents

Source: Ofcom consumer research, October 2016
Base: All respondents, UK=1000, FRA=1008, GER=1010, ITA=1032, USA=1016, JPN=1011, AUS=1007, ESP=1016, SWE=1000
Q.3a Which of the following devices do you have in your home? (tablet, laptop, desktop)
Q.4a Which of the following devices do you personally use either at home or elsewhere? (smartphone)

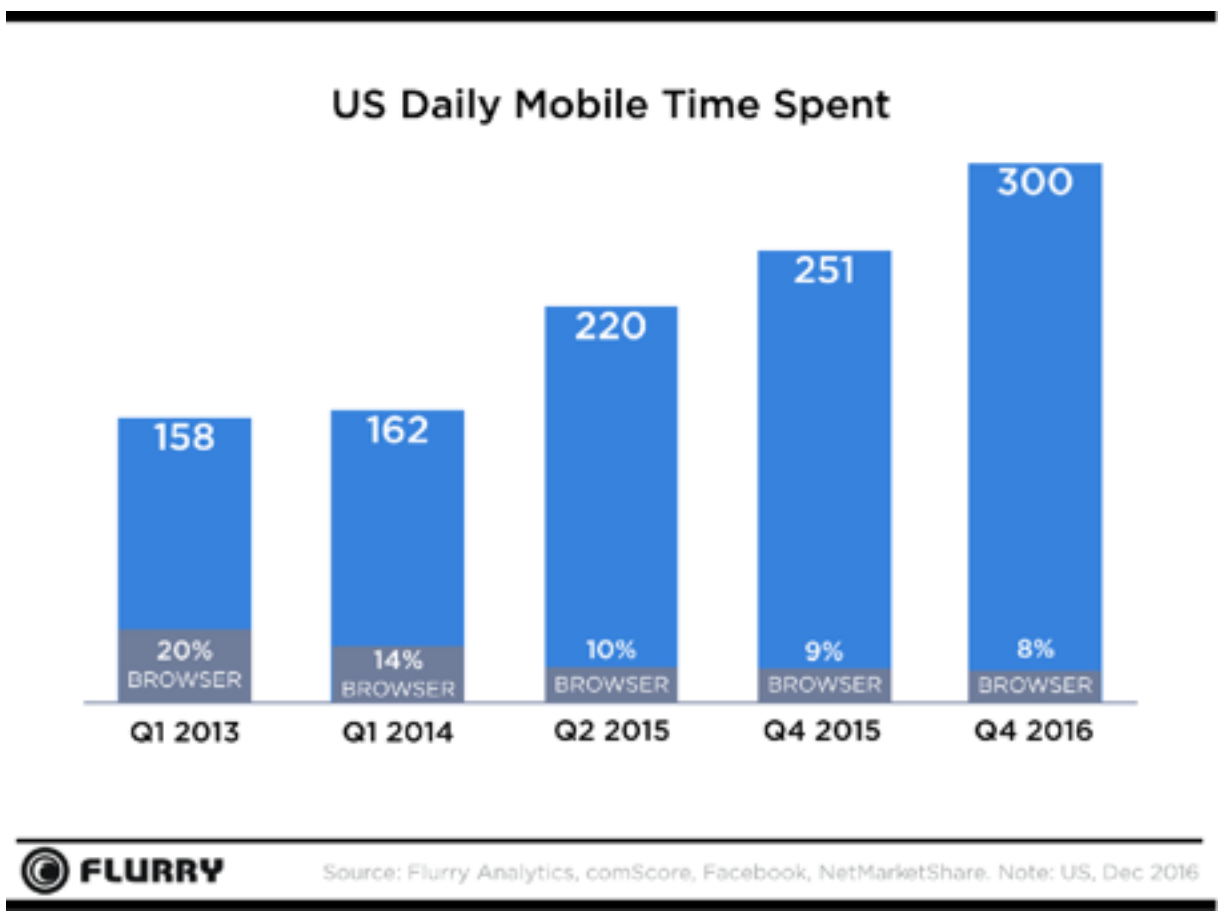
Mobile first

- Mobile devices are becoming the main way for people to be online
  - In UK 61% of Internet users use mobile devices
  - In Indonesia 91%



Mobile first

- For example in the USA people spend almost 6hrs per day online using a mobile phone



https://en.wikipedia.org/wiki/List_of_countries_by_number_of_broadband_Internet_subscriptions

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Broadband Penetration

	Fixed-broadband subscriptions				Mobile-cellular subscriptions			
Country or area	Number[5]	Rank	%[6]	Rank	Number[7]	Rank	%[8]	Rank
China	174,285,380	1	13.0	66	231,614,860	3	17.2	75
United States	87,974,583	2	28.0	24	234,412,672	2	74.7	9
Japan	35,556,075	3	27.9	25	144,077,507	4	113.1	2
Germany	27,674,074	4	34.0	13	33,336,214	11	41.0	40
France	24,780,180	5	37.8	8	34,233,625	10	52.2	27
United Kingdom	21,455,580	6	34.0	14	45,419,806	9	72.0	14
Russia	20,630,858	7	14.5	61	75,344,817	6	52.9	25
South Korea	18,354,447	8	37.6	9	51,810,697	8	106.0	4
Brazil	18,275,780	9	9.2	85	73,021,400	7	36.6	44
India[9]	18,230,000	10	1.4					
Italy	13,548,539	11	22.1					
Mexico	12,588,657	12	10.9					
Spain	11,410,276	13	24.3					
Canada	11,282,326	14	32.9					
Turkey	8,411,176	15	10.5					

South Korea is still number one – has fastest Internet speed worldwide

Posted in Main on January 31st, 2012 by Pingdom

Want to be able to download a DVD worth of data in about 38 minutes? It may not seem very impressive, but that's with the average Internet speed in South Korea, according to the latest "State of the Internet" report by Akamai.

Covering Q3 2011, the report again puts South Korea at the top of the list of countries with the fastest Internet connections. The country scored an average connection speed of 16.7 Mbps in Q3 2011.

Read more

http://royal.pingdom.com/2012/01/31/south-korea-is-still-number-one-has-f

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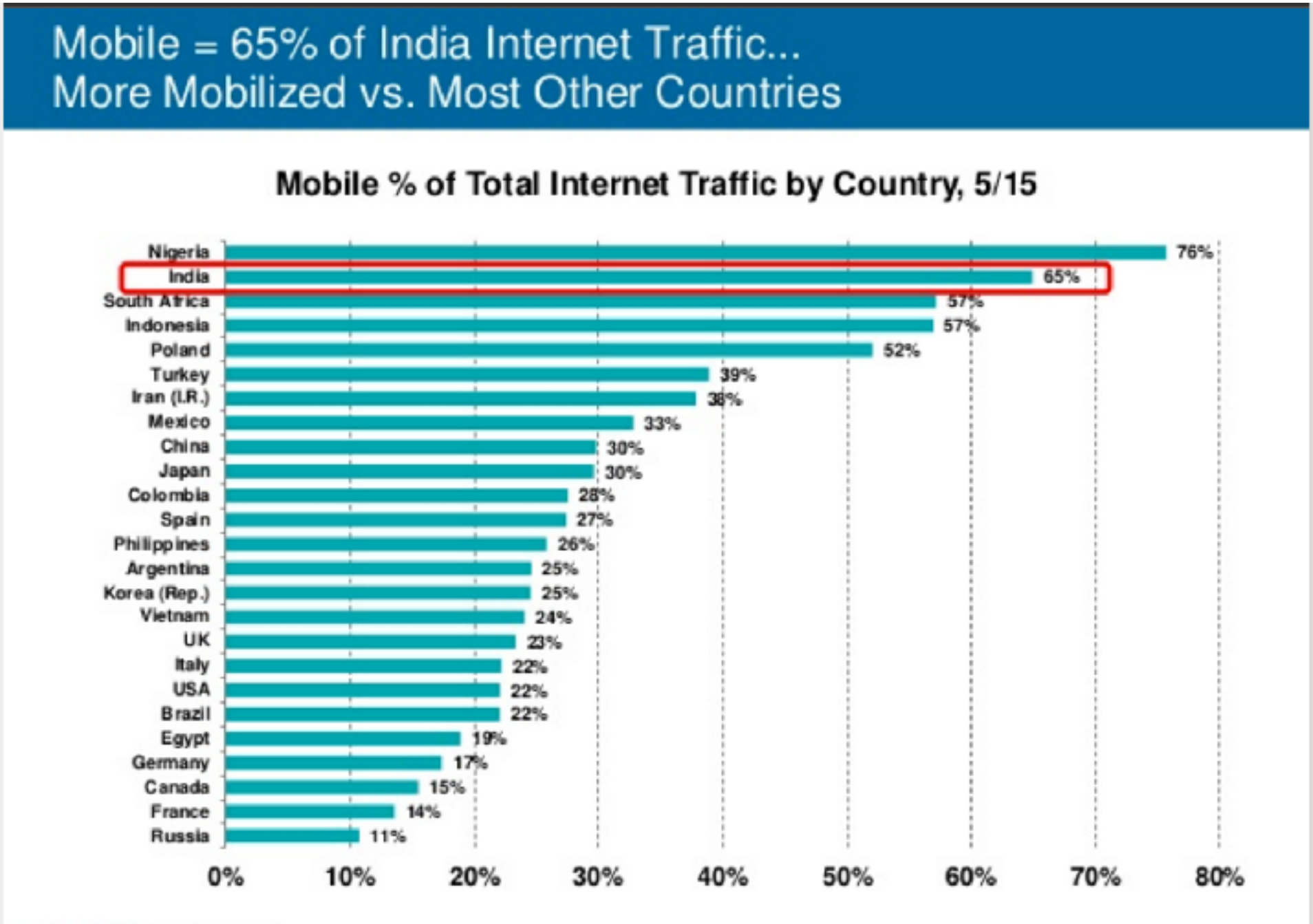
Not all the world is the same

http://www.slideshare.net/kleinerperkins/internet-trends-v1/169-169Mobile_65_of_India_Internet



China

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

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

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A brief history of the Internet

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It all came from an intuition

"It is not hard to imagine […] computers storing information associated with every cubic meter of the earth's surface".

Howard Rheingold, (2003) *Smart Mobs: The Next Social Revolution*. Cambridge MA: Basic Books.

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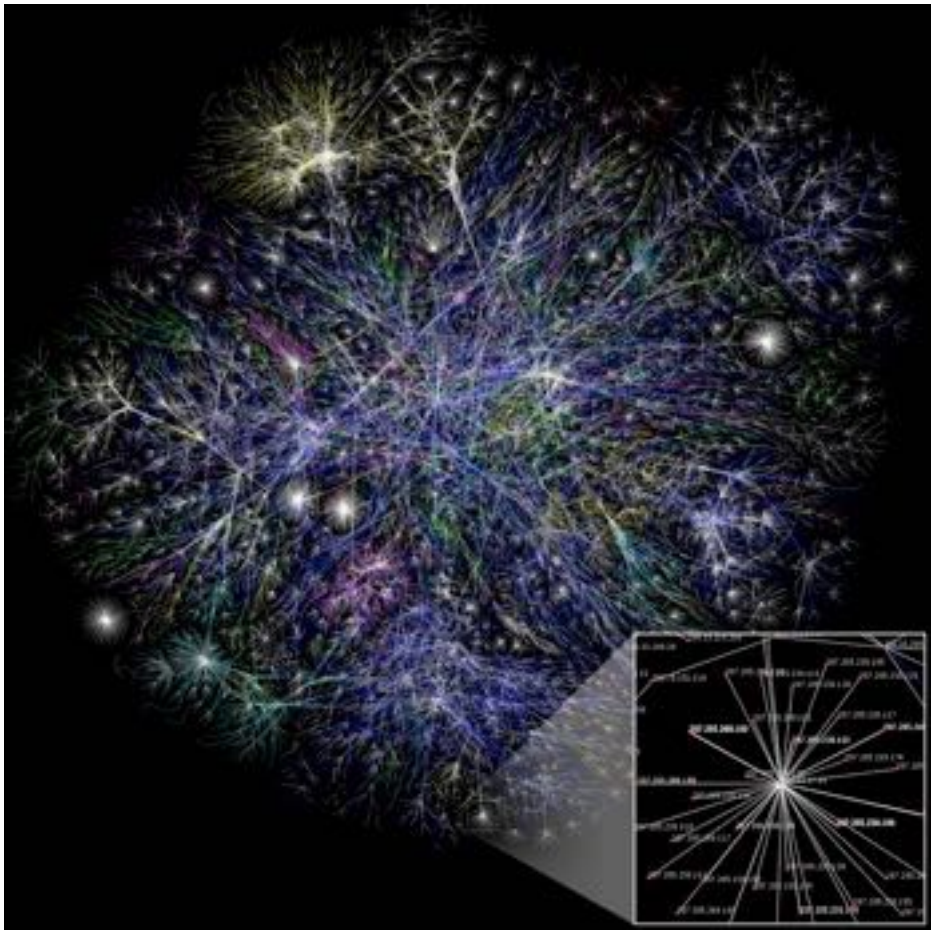
Internet

- a world-wide collection of heterogeneous computers interconnected



Matt Britt

A small partial map of the **Internet**

Surce: Wikipedia

Why the internet?

- 1950s: for the first time in their history America felt the threat of foreign invasion

- August 1949: First USRR Atomic Bomb
- 1957: USSR launches Sputnik, first artificial earth satellite.
- 12 April 1961, Yuri Gagarin the first human to travel into space
- 13 April 1961: building of the Berlin Wall starts

Sources of images: Wikipedia

- Arpanet (precursor of Internet) was designed as an alternative communication channel in case of Soviet invasion

The Beginning

- The first Host-to-Host message was launched from UCLA to SRI.
- Procedure to "logon" to the SRI Host from the UCLA Host:
  - type in "log"
  - the system at SRI to add "in" thus creating the word "login".
  - A telephone headset at both ends so to confirm receipt
- They typed in the "l" and asked if they received it; yes
- They typed in the "o"; received
- They then typed in the "g" and the darned system **CRASHED**!
- Quite a beginning!

Kleinrock: The Birth of the Internet
http://www.lk.cs.ucla.edu/LK/Inet/birth.html

ARPANET

http://livinginternet.com/i/ii_arpanet.htm

- East Coast. In March, 1970, the consulting company Bolt, Beranek & Newman joined the ARPANET, becoming the first ARPANET node on the US east coast.
- Remote Access. In September, 1971, the first Terminal Interface Processor (TIP) was deployed, enabling individual computer terminals to dial directly into the ARPANET, thereby greatly increasing the ease of network connections and leading to significant growth.
- 1972. By the end of 1972 there were 24 sites on the ARPANET, including the Department of Defense, the National Science Foundation, NASA, and the Federal Reserve Board.
- 1973. By the end of 1973 there were 37 sites on the ARPANET, including a satellite link from California to Hawaii. Also in 1973, the University College of London in England and the Royal Radar Establishment in Norway become the first international connections to the ARPANET.
- 1974. In June, 1974, there were 62 computers connected to the ARPANET.
- 1977. In March, 1977, there were 111 computers on the ARPANET.
- 1983. In 1983, an unclassified military only network called MILNET split off from the ARPANET, remaining connected only at a small number of gateways for exchange of electronic mail that could be easily disconnected for security reasons if required. MILNET later become part of the DoD Defense Data Network, or DDN.
- 1985. By the middle of the 80's there were ARPANET gateways to external networks across North America, Europe, and in Australia, and the net was global in scope. Marty Lyons has linked a map of the existing network gateways on 18 June 1985 on his Publications page under Primary Internet Gateways.
- 1990. The ARPANET was retired in 1990. Most university computers that were connected to it were moved to networks connected to the NSFNET, passing the torch from the old network to the new.

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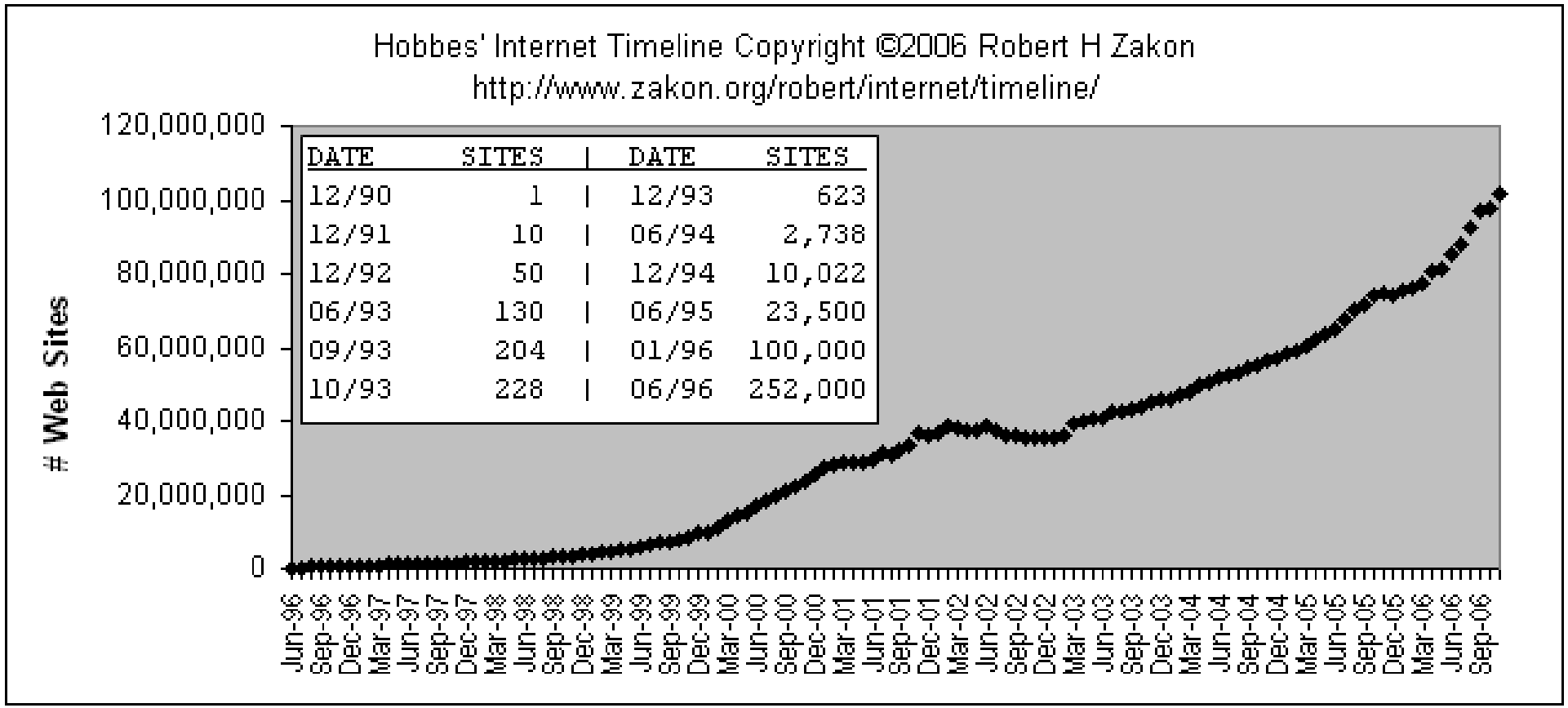
Growth of the Internet

- Number of Servers



DATE	SITES	DATE	SITES
12/90	1	12/93	623
12/91	10	06/94	2,738
12/92	50	12/94	10,022
06/93	130	06/95	23,500
09/93	204	01/96	100,000
10/93	228	06/96	252,000

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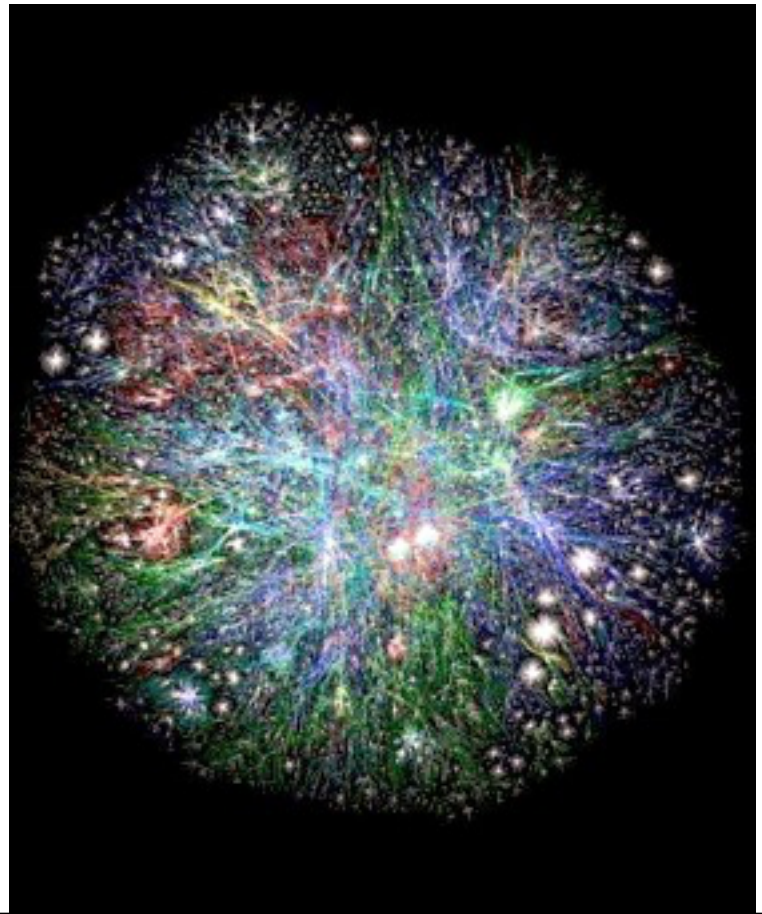
The Web

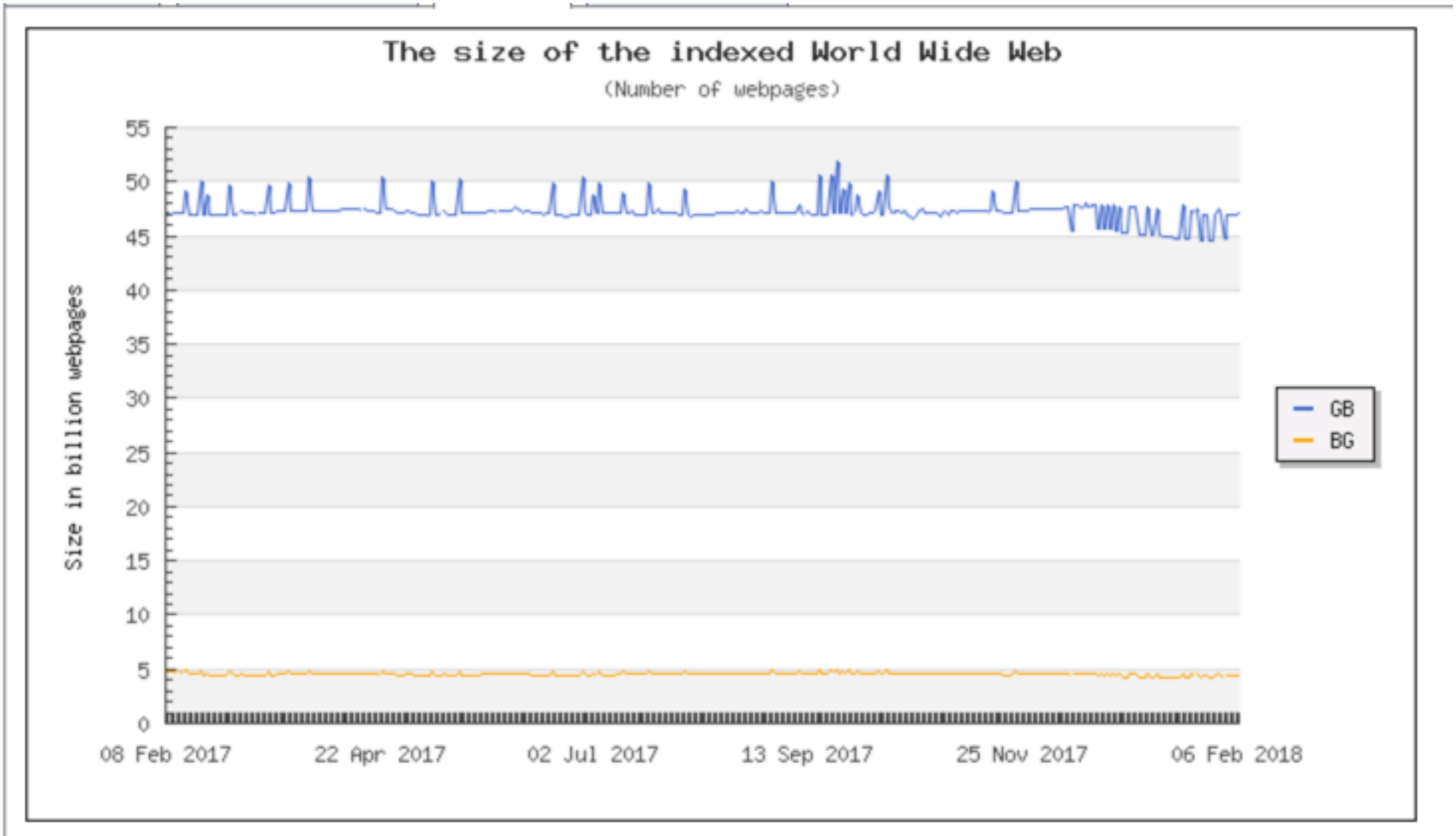
- Hypertext information system that runs over the Internet
  - dynamic, cross-platform, global, distributed, interactive, graphical



3D Map of the World Wide Web
The most popular image of the WWW according to Google
www.vlib.us

The size of the World Wide Web (The Internet)

The Indexed Web contains **at least 4.26 billion pages** (Thursday, 08 February, 2018).



http://www.worldwidewebsize.com/

What is the World Wide Web?

- The World Wide Web (or simply the Web) is a dynamic, cross-platform, global, distributed, interactive, graphical hypertext information system the runs over the Internet.

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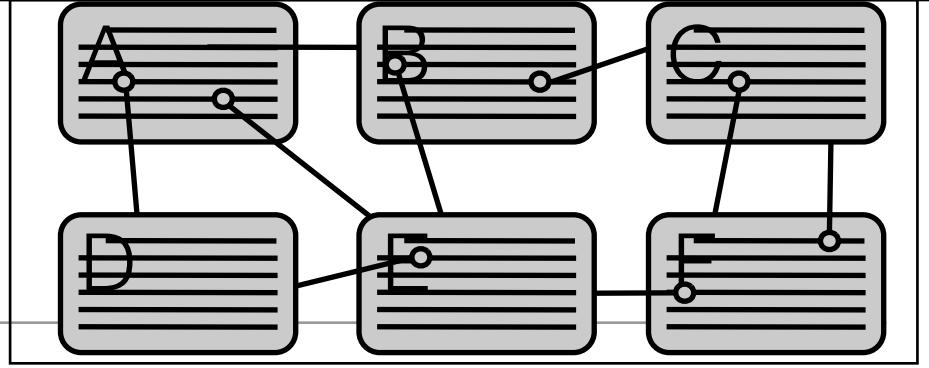
Hypertext



- A special type of database system, invented by Ted Nelson in the 1960s, in which objects (text, pictures, music, programs, and so on) can be creatively linked to each other.
  - When you select an object, you can see all the other objects that are linked to it.
  - You can move from one object to another even though they might have very different forms.

http://www.webopedia.com/TERM/H/hypertext.html

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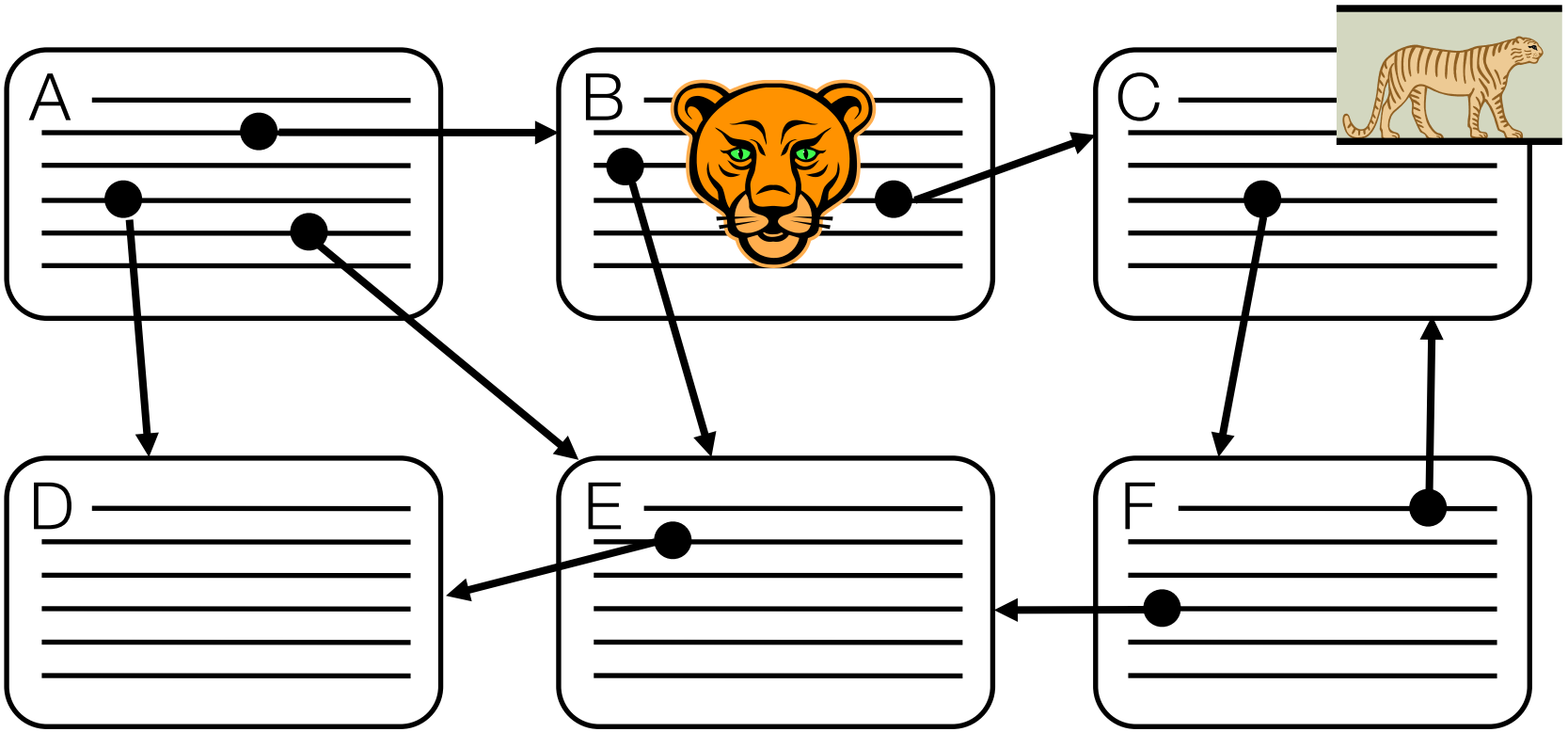
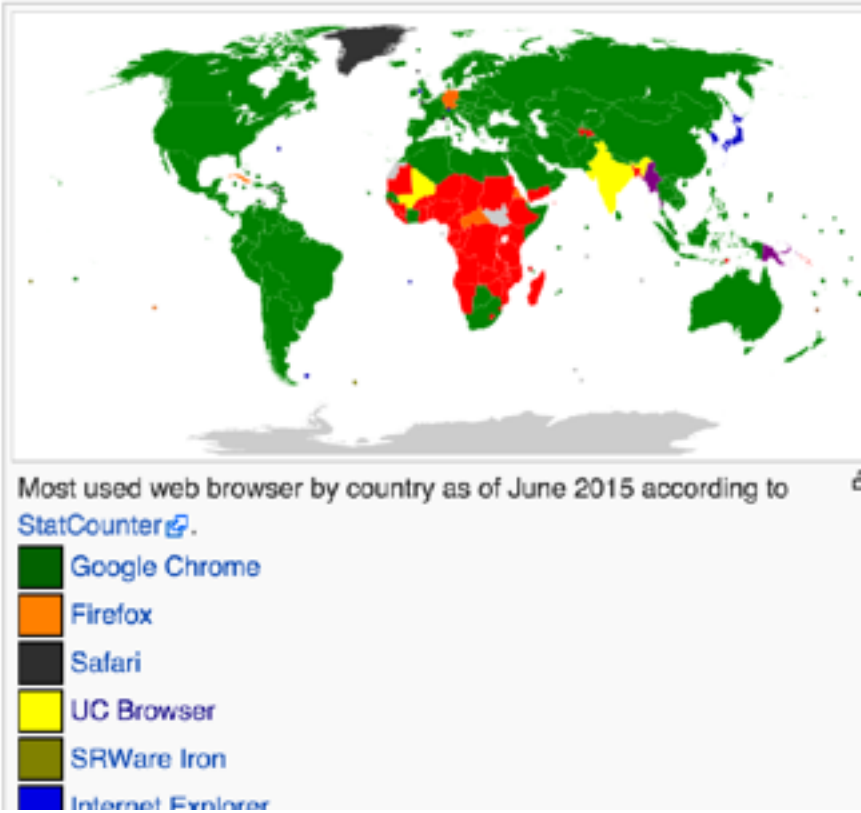
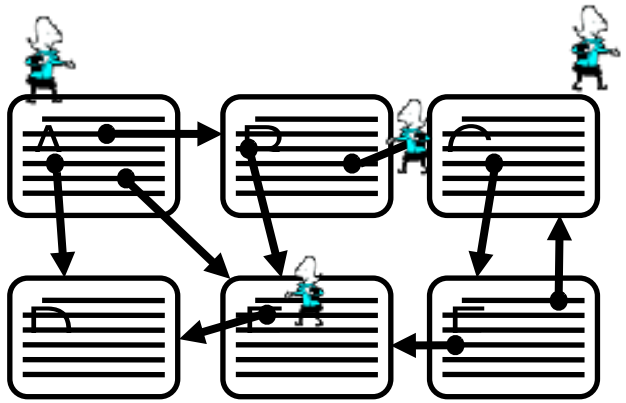
Graphical Hypertext

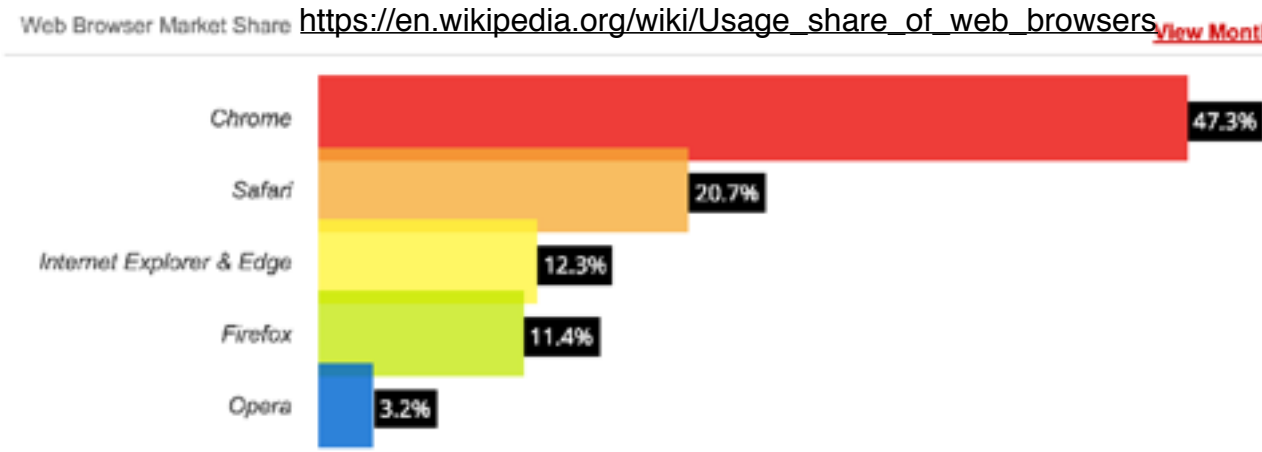


A Browser used to be needed to interact



- Interactive:
  - Designed for personal use
  - A person must be in the loop





https://www.w3counter.com/globalstats.php

- One of the major advantages and disadvantages of the Web

http://royal.pingdom.com/2012/01/17/internet-2011-in-numbers/

Slide by Daniela Petrelli

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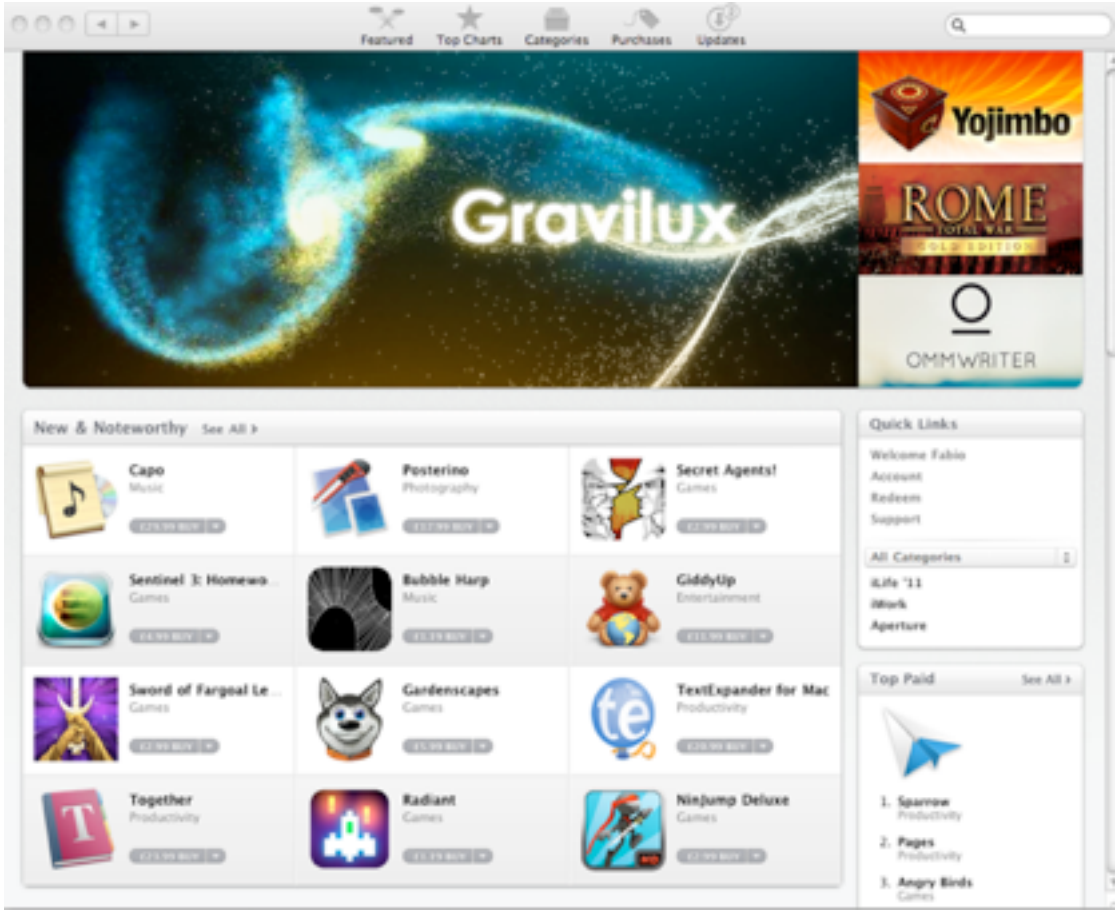
Browsers? What Browsers?



What is the World Wide Web?

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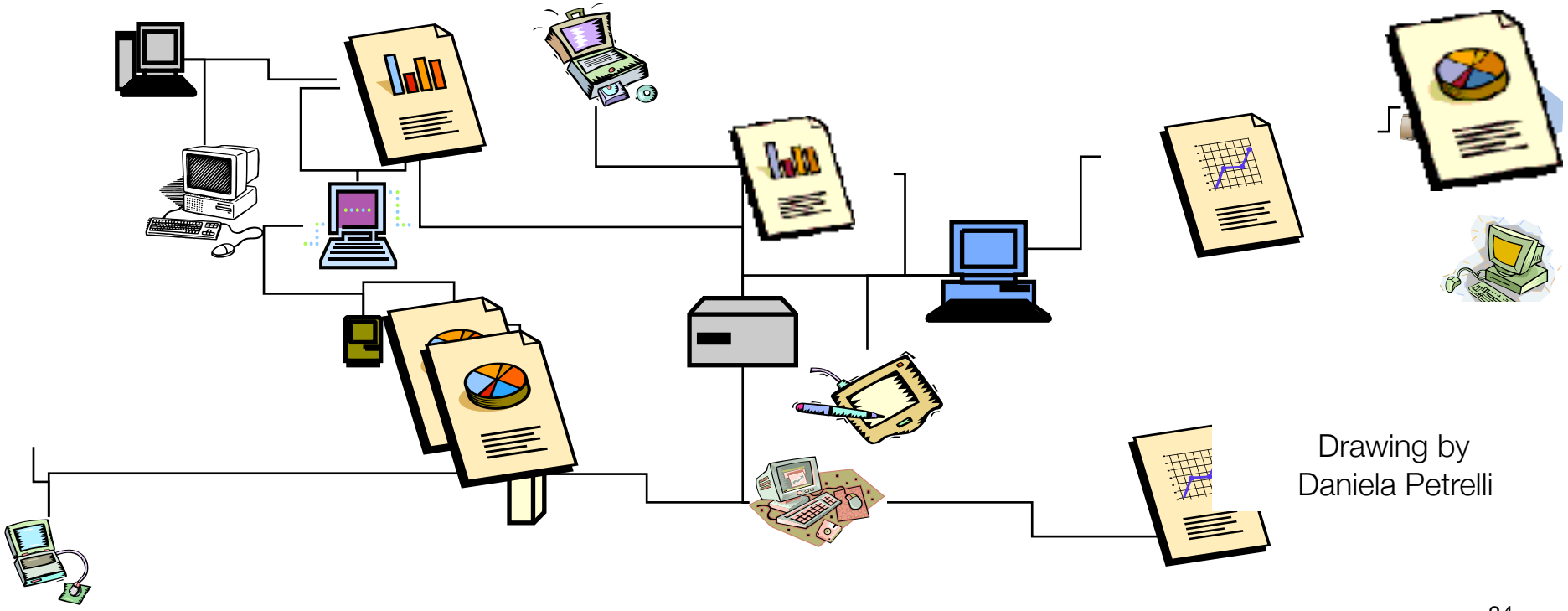
What is the World Wide Web?

- The World Wide Web (or simply the Web) is a dynamic, cross-platform, global, distributed, interactive, graphical hypertext information system the runs over the Internet.

Cross-platform & Dynamic

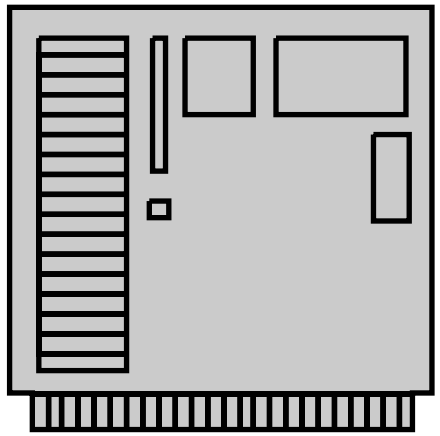
- No specific hardware platform is necessary
- Documents appear and disappear constantly
  - The EA use case: storing the url of news Web pages



Drawing by
Daniela Petrelli

Client & Server

The browser requests a page (via a URL)



The **Web Server** computer: where the Web page is

The **Client**: where the user is and the browser is running

The HTML file stored at the URL is sent back

Is this architecture now challenged by recent developments e.g. WebRTC?

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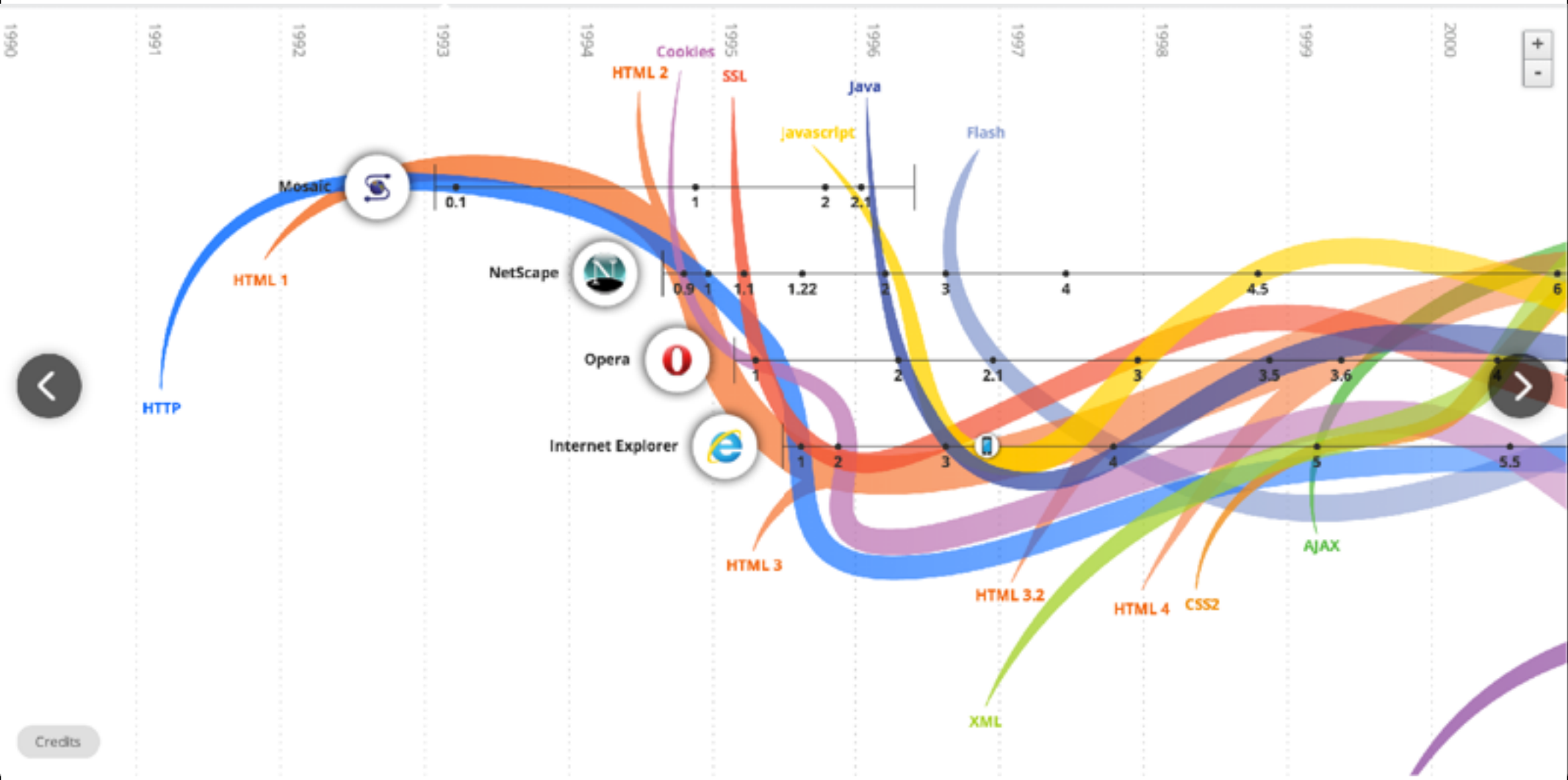
evolutionoftheweb.com



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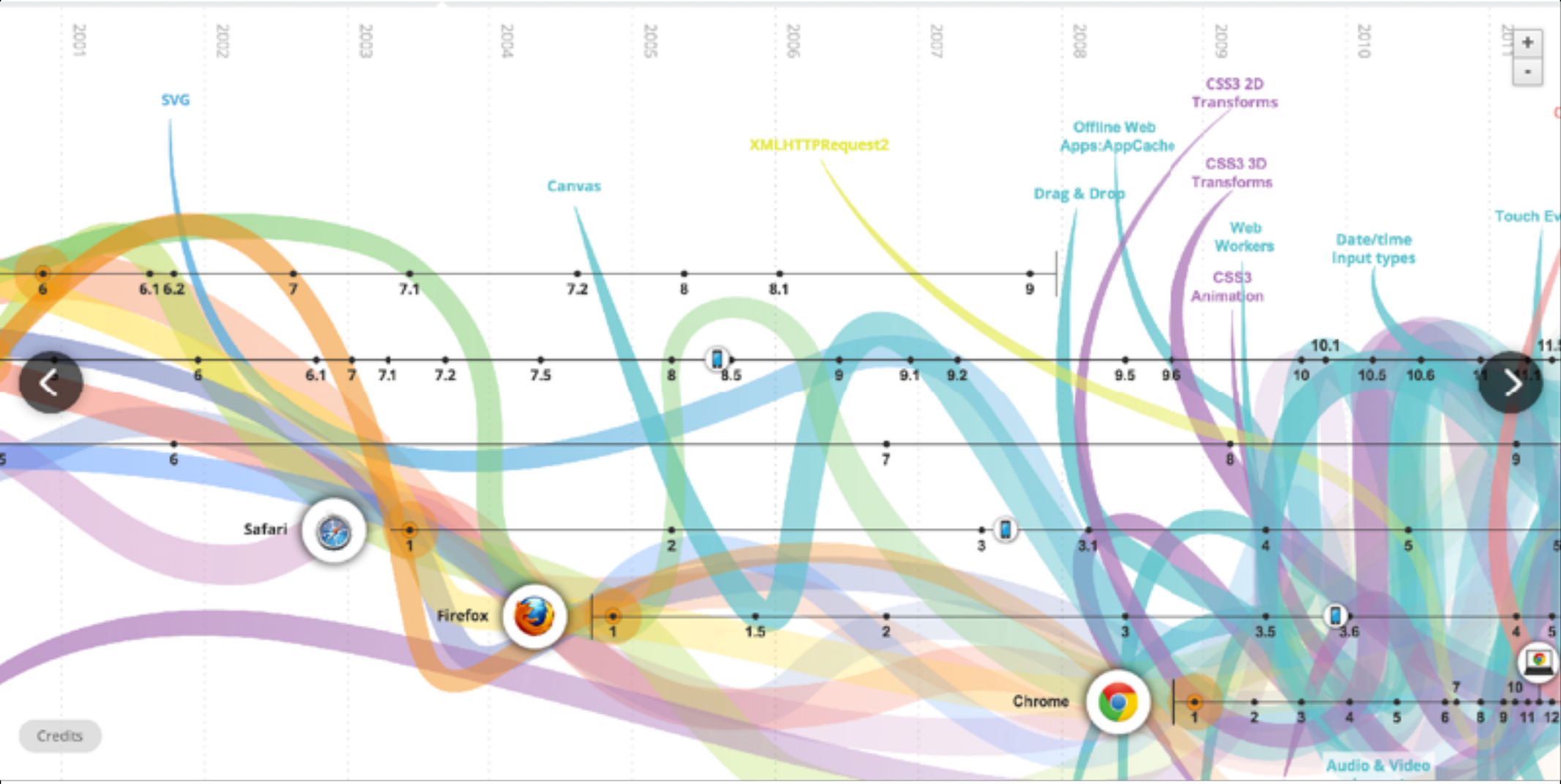

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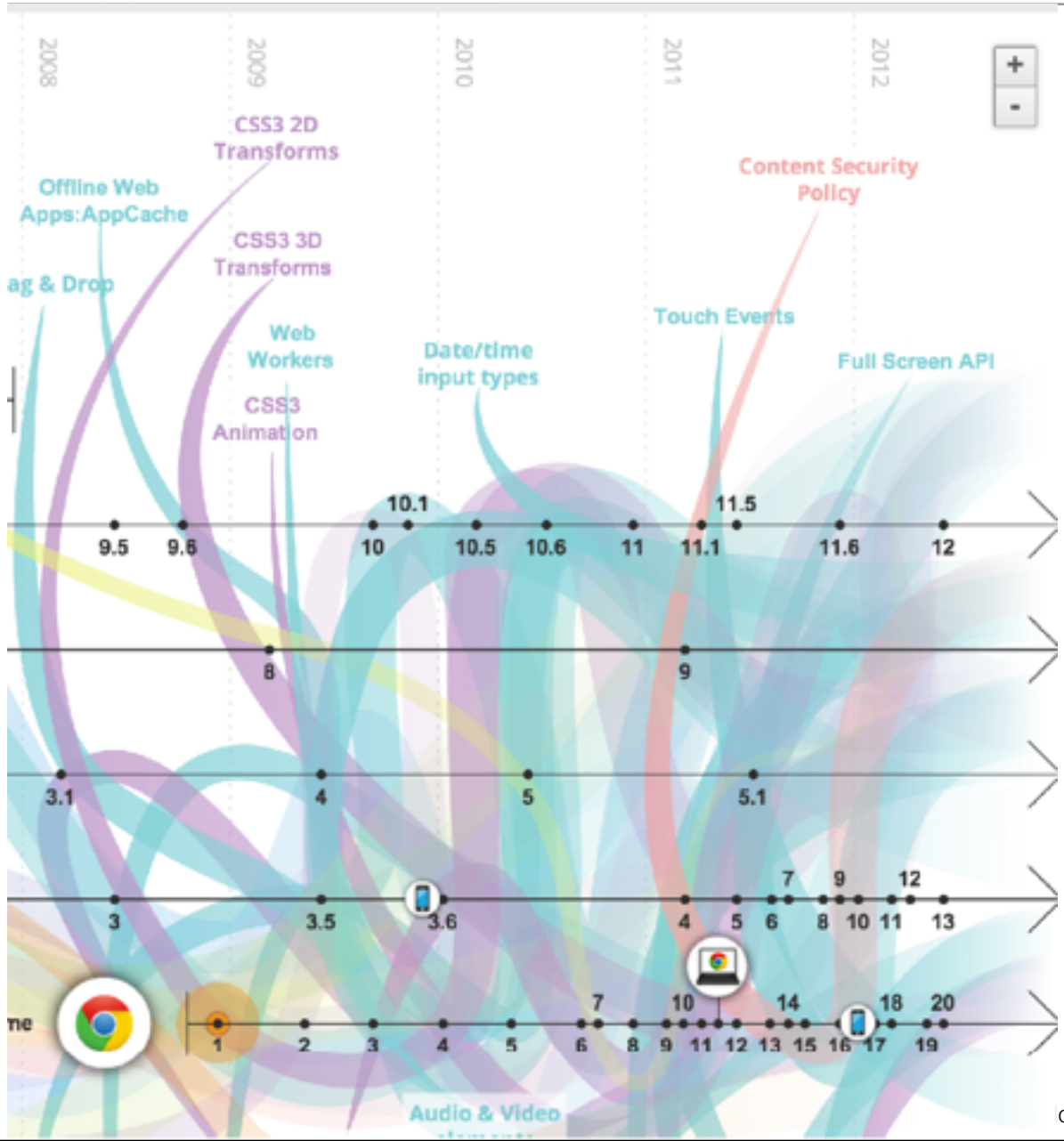
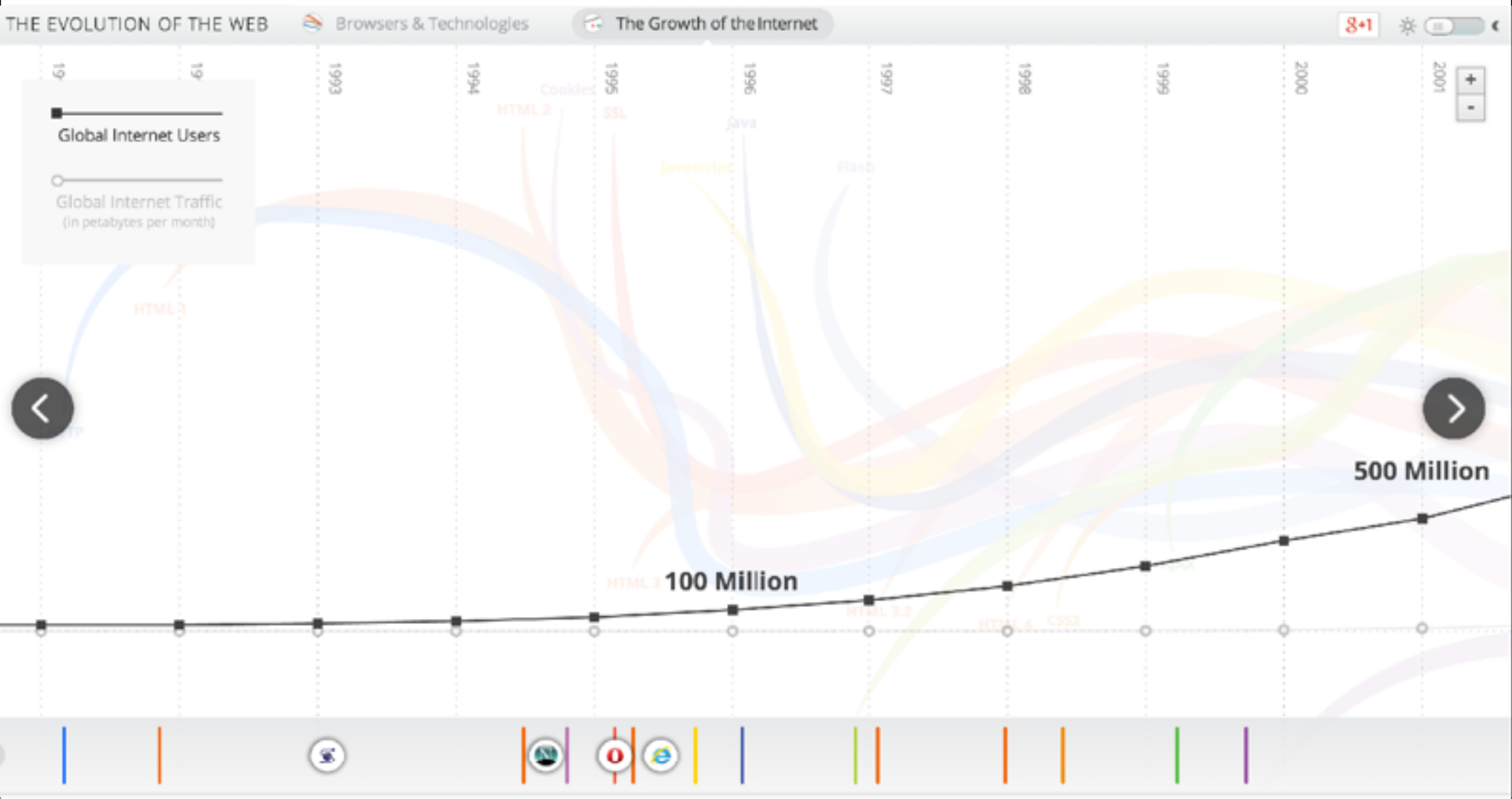


Growth of the Internet



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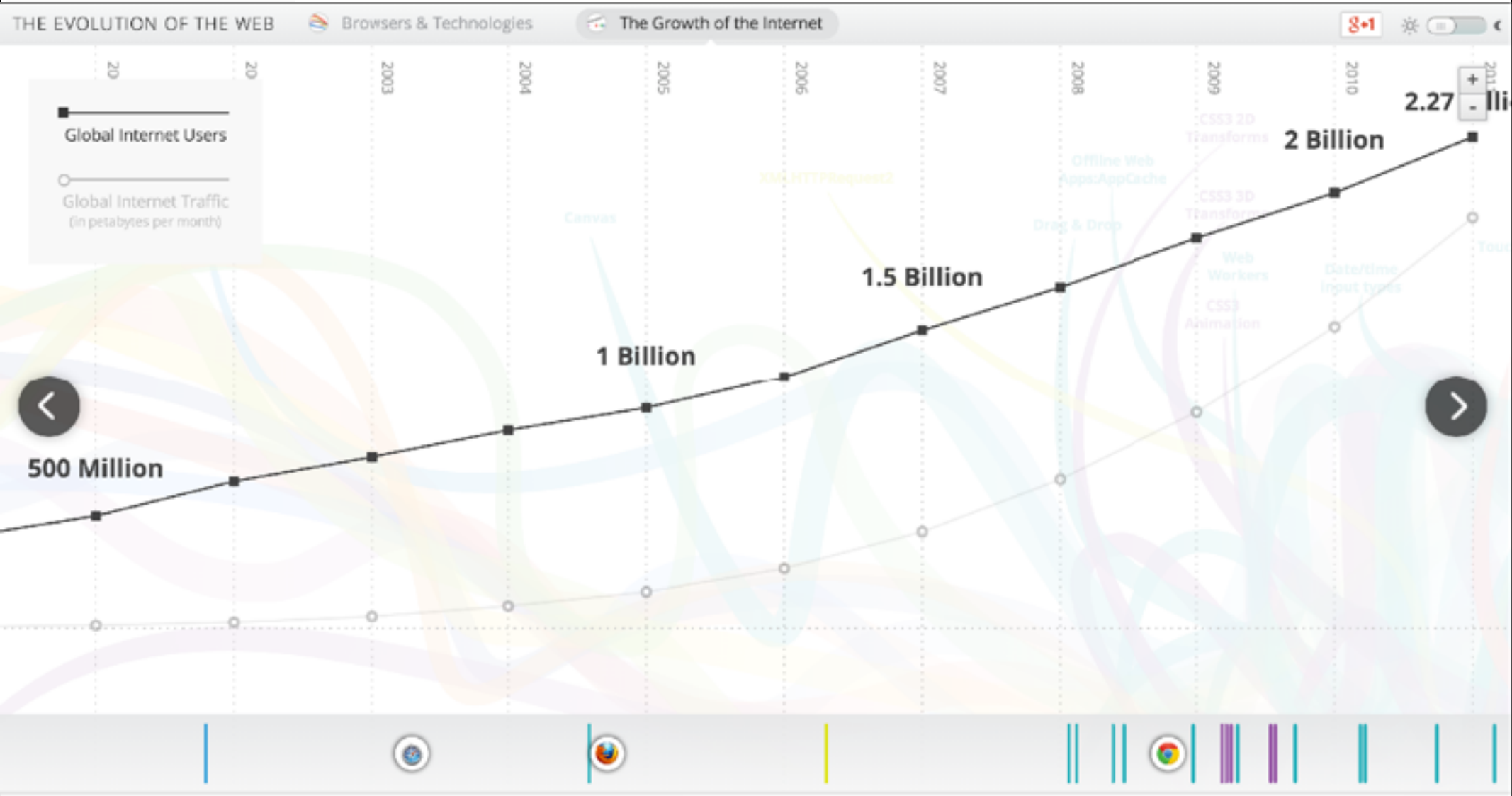
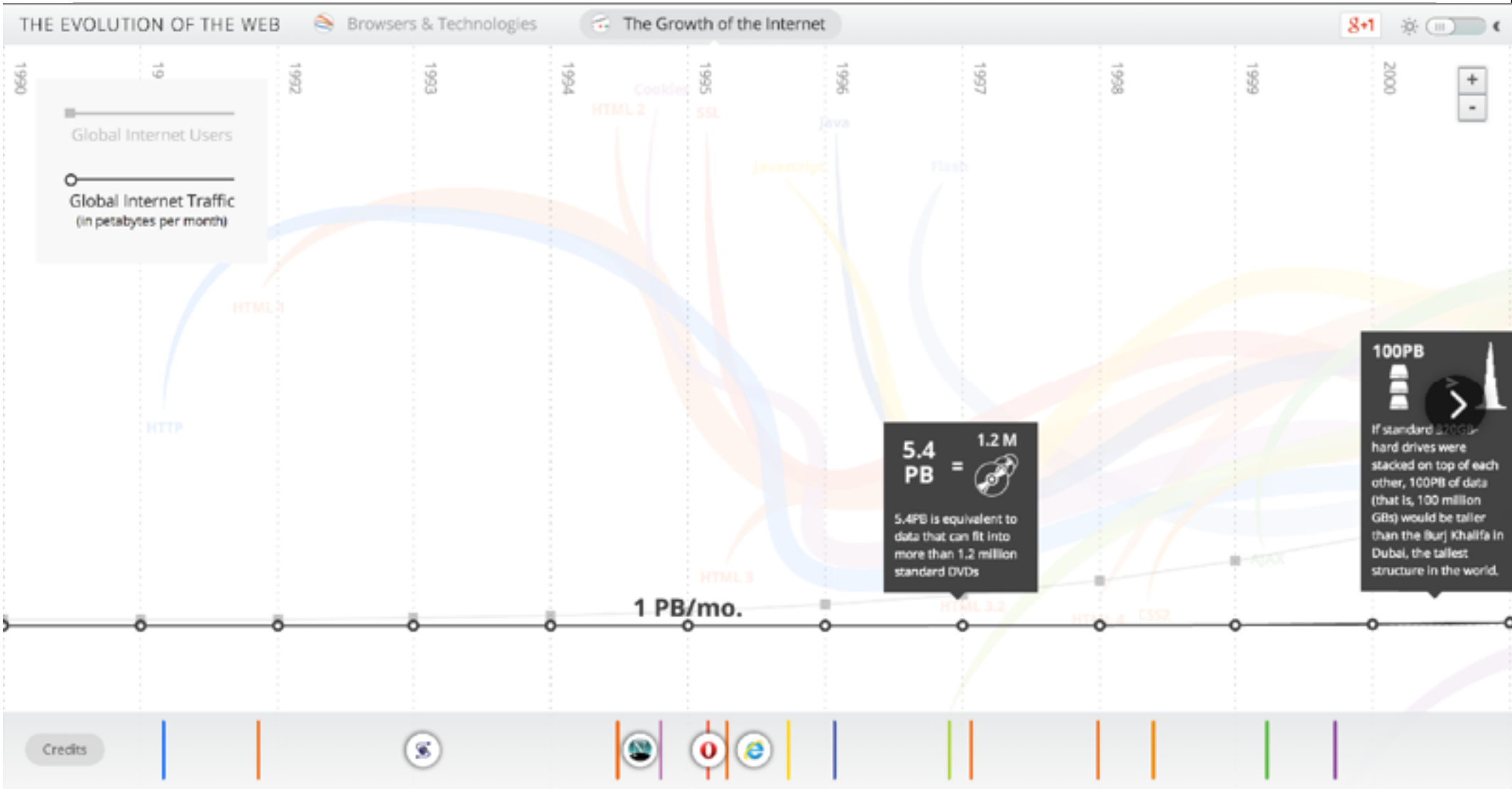


Global Internet Traffic



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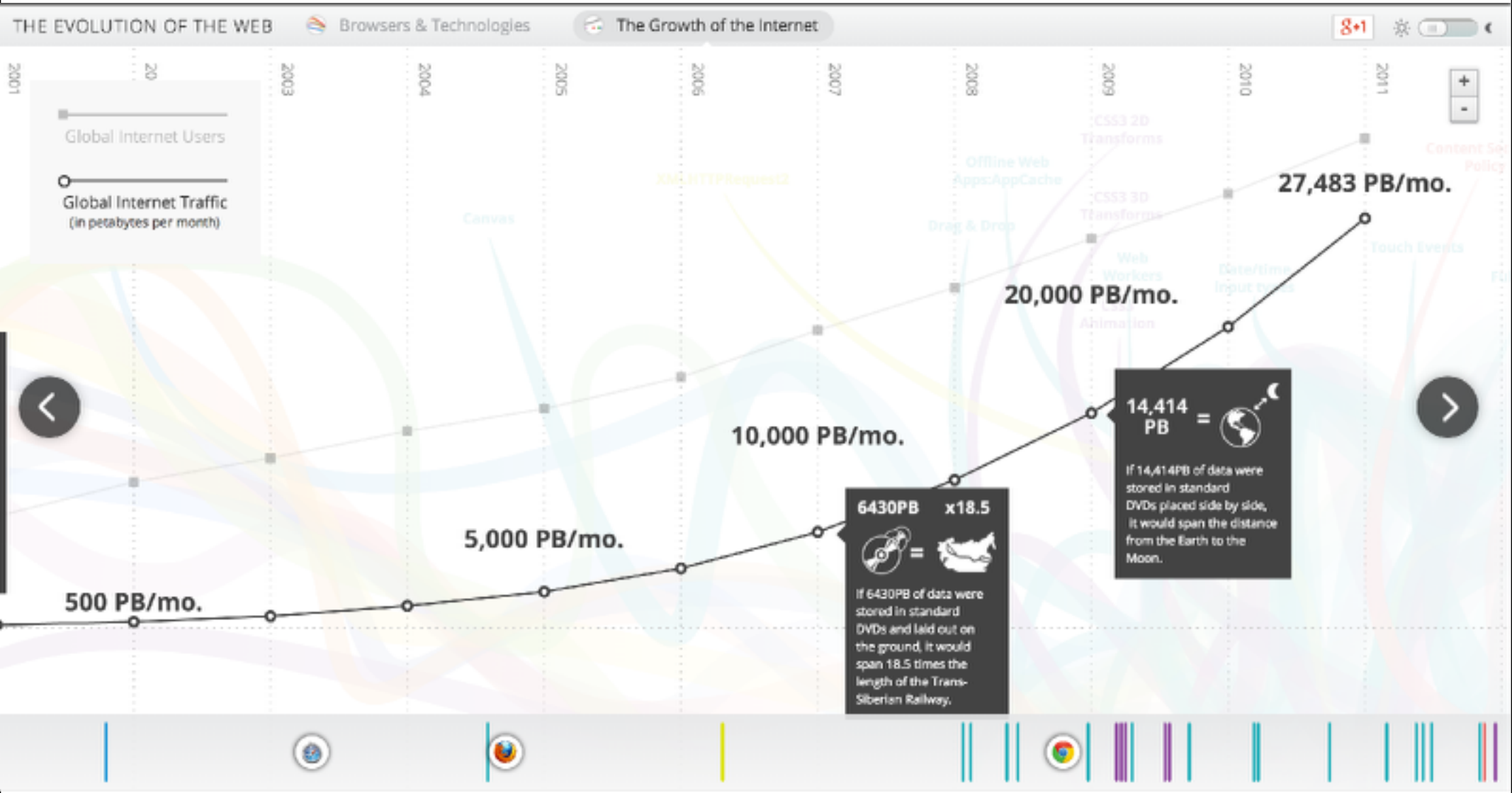

The largest source of data

- User Generated Content
  - With 2B billion monthly active users Facebook would be the largest country in the world (bigger than China)

http://en.wikipedia.org/wiki/List_of_countries_by_population

Rank	Country (or dependent territory)	Population	Date	% of world population
1	China[Note 2]	1,389,080,000	February 6, 2018	18.3%
2	India[Note 3]	1,327,550,000	February 6, 2018	17.5%
3	United States[Note 4]	326,581,000	February 6, 2018	4.3%
4	Indonesia	261,890,900	July 1, 2017	3.45%
5	Pakistan	210,498,000	February 6, 2018	2.77%
6	Brazil	208,624,000	February 6, 2018	2.74%

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Top 10 Websites

https://en.wikipedia.org/wiki/List_of_most_popular_websites

Site	Domain	Alexa top 50 global sites (As of January 31, 2018)[3]	SimilarWeb top 50 sites (As of December 2017)[4]	Type	Principal country
Google	google.com	1	1	Internet services and products	U.S.
YouTube	youtube.com	2	3	Video sharing	U.S.
Facebook	facebook.com	3	2	Social network	U.S.
Baidu	baidu.com	4	4	Search engine	China
Wikipedia	wikipedia.org	5	5	Encyclopedia	U.S.
Reddit	reddit.com	6	36	Social news and entertainment	U.S.
Yahoo!	yahoo.com	7	8	Portal and media	U.S.
Google India	google.co.in	8	7	Search engine	India
Tencent QQ	qq.com	9	15	Portal	China
Amazon	amazon.com	10	18	E-commerce and cloud computing	U.S.

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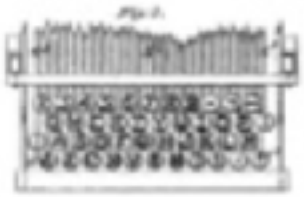
Trends: New Devices

http://www.myds.com.au/img/news/NewsSuggest_GTEBM75G.jpg

Human-Computer Interaction (1830s – 2015), USA = Touch 1.0 → Touch 2.0 → Touch 3.0 → Voice

Punch Cards for Informatics
1832



QWERTY Keyboard
1872

Electromechanical Computer (Z3)
1941

Electronic Computer (ENIAC)
1943

Paper Tape Reader (Harvard Mark I)
1944

Mainframe Computers (IBM SSEC)
1948

Trackball
1952

Joystick
1967

Microcomputers (IBM Mark-8)
1974

Portable Computer (IBM 5100)
1975

Commercial Use of Window-Based GUI (Xerox Star)
1981

Commercial Use of Mouse (Apple Lisa)
1983

Commercial Use of Mobile Computing (PalmPilot)
1996

Touch + Camera - based Mobile Computing (iPhone 2G)
2007

Voice on Mobile (Siri)
2011

Voice on Connected / Ambient Devices (Amazon Echo)
2014

@KPCB

...Amazon Alexa Voice Platform Goal = Faster / Easier Shopping on Amazon

Leveraging proliferation of microphones throughout house to reduce friction for making purchases...
3x faster to shop using microphone than to navigate menus in mobile apps...*

Amazon Echo

Amazon Echo Dot

Amazon Echo Tap

Amazon Prime
(~44MM USA Subscribers)

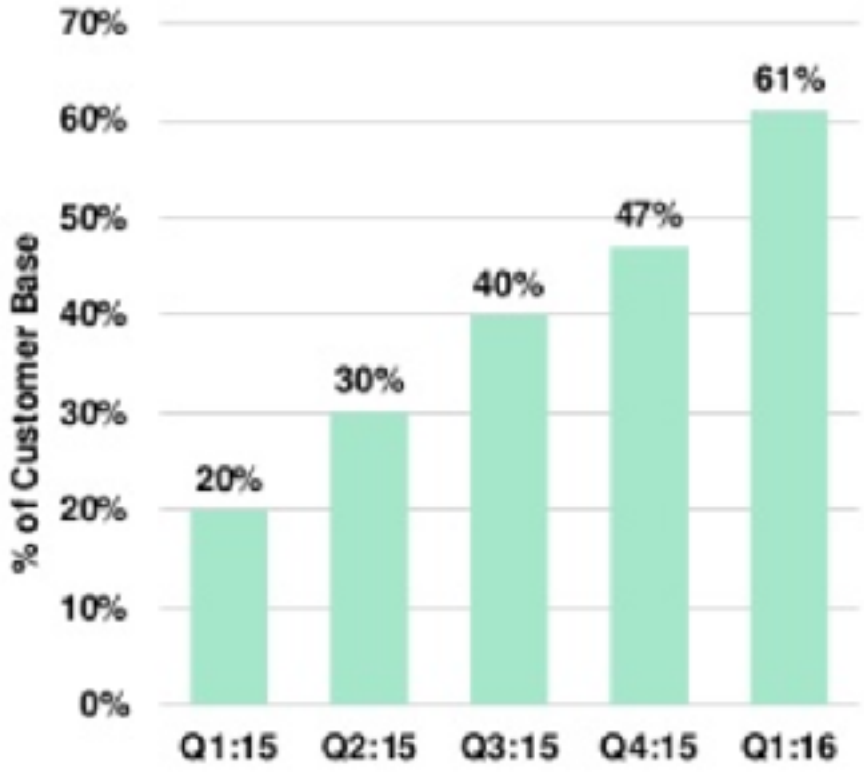
Evolution of Shopping with Echo

1. Shopping Lists **(2014)**
2. Reorder past purchases by voice **(2015)**
3. Order new items – assuming you are fine with Amazon selecting exact item **(2015)**

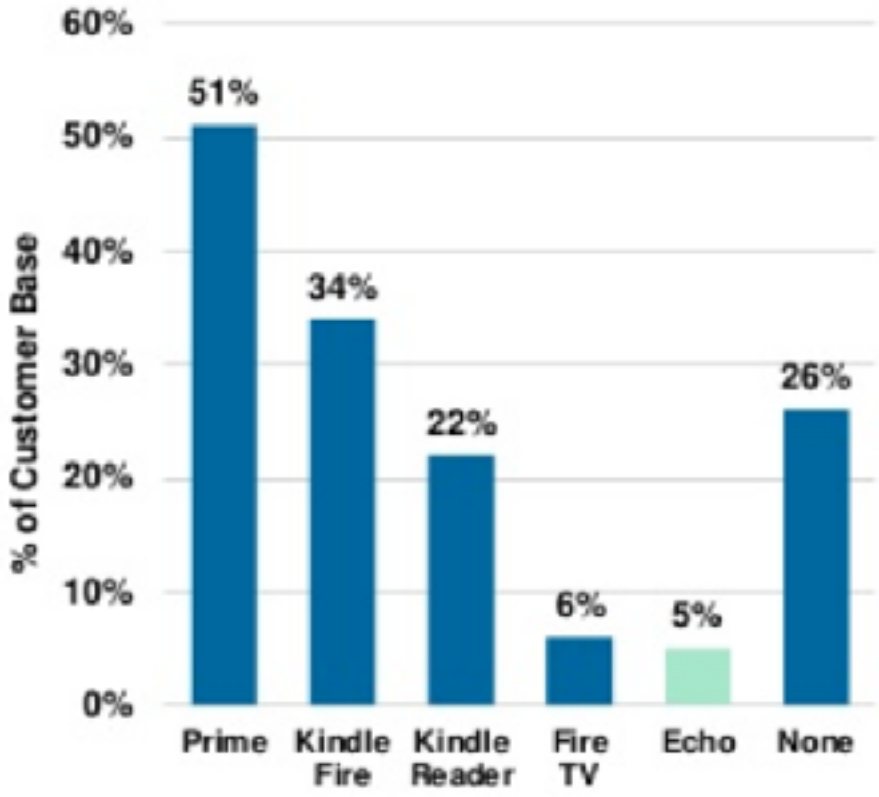
~5% of Amazon USA Customers Own an Echo vs. 2% Y/Y...
~4MM Units Sold Since Launch (11/14), per CIRP

~4MM Amazon Echo devices have been sold in USA as of 3/16, with ~1MM sold in Q1:16, per CIRP estimates

Amazon Customer Awareness of Amazon Echo, USA, Q1:15 – Q1:16



Amazon Customer Ownership of Amazon Devices, USA, Q1:16



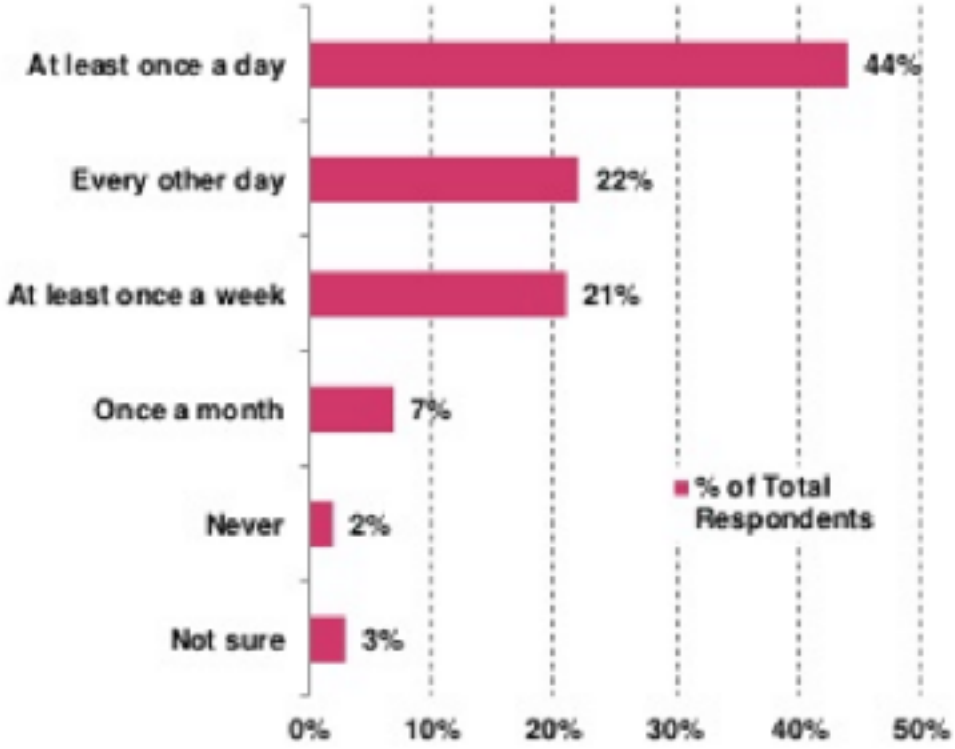
@KPCB

Source: Consumer Intelligence Research Partners (CIRP).
Note: Amazon Echo launched to consumers in 11/14 and widely available to consumers in 6/15.

Millennials Love Their Smartphone Cameras...
44% Use Camera / Video Function Daily...76% Post on Social Media

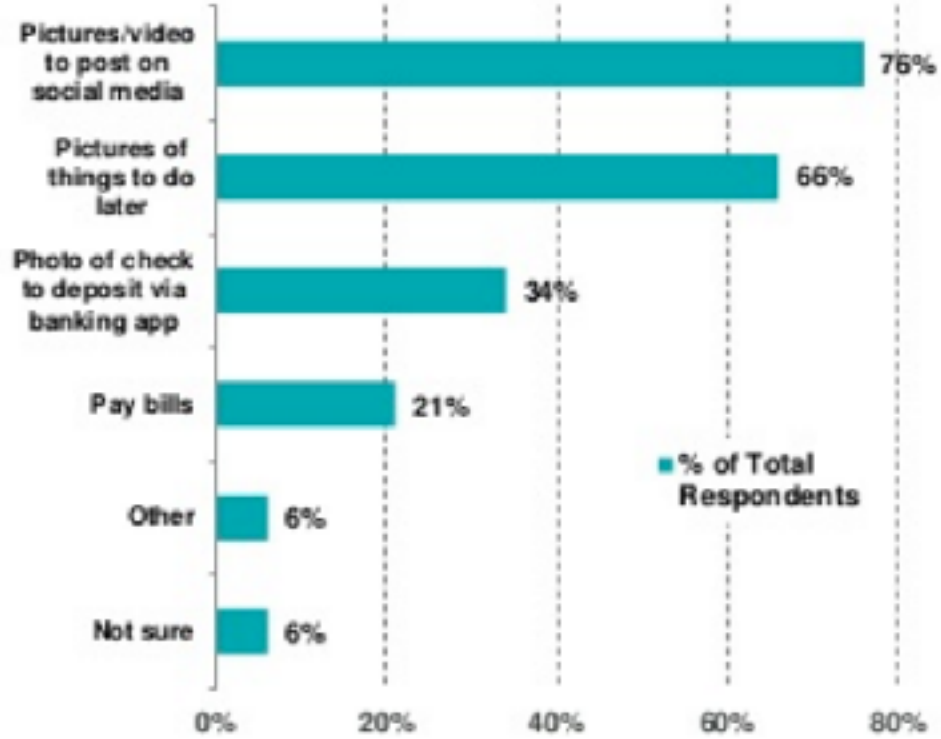
Millennial Smartphone Camera Usage*, USA, 2014

How often do you use your device's camera/video function?



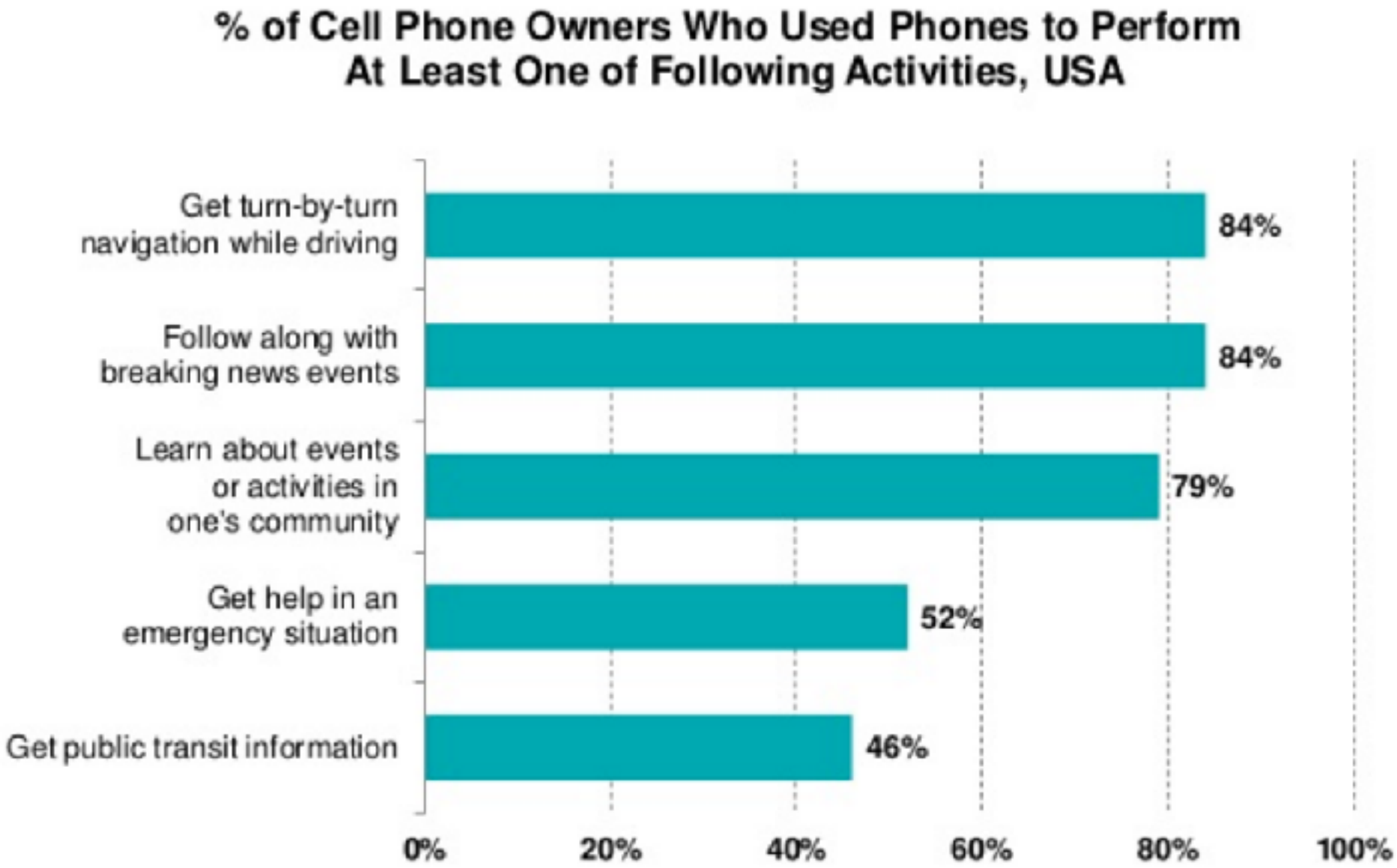
Millennial Smartphone Camera Use Cases, USA, 2014

For what things do you use your smartphone camera?



Source: Zogby Analytics.
*18-34 year olds.
Note: Zogby Analytics was commissioned by Mitek Systems, Inc. to conduct an online survey of 1,019 millennials who have a smartphone. For the purposes of this survey, "millennials" are defined as adults between the ages of 18-34. All interviews were completed May 30 through June 6, 2014.

‘Just in Time’ Information = Enabled by Mobiles + Sensors + Humans...



http://www.slideshare.net/kleinerperkins/internet-trends-v1/73-73Just_in_Time_Information_Enabled

@KPCB Source: US Smartphone Use in 2015, Pew Research Center, 4/15.
Survey conducted among 2,186 USA smartphone owners during 10/14.

Some People Laugh at Wearables

Some People Laughed at PC & Internet

modified version of slide

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The Web of Data

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Schema.org

The Type Hierarchy

Here is the entire hierarchy in a single file.
Types that have multiple parents are expanded out only once and have an asterisk

DataType
- Boolean
- Date
- Number
  - Float
  - Integer
- Text
  - URL

Thing: description, image, name, url
- CreativeWork: about, accountablePerson, aggregateRating, alternativeHeadline, associatedMedia, audio, author, awards, comment, contentLocation, contentRating, contributor, copyrightHolder, copyrightYear, creator, dateCreated, dateModified, datePublished, discussionUrl, editor, encodings, gen headline, inLanguage, interactionCount, isFamilyFriendly, keywords, mentions, offers, provider, publisher, publishingPrinciples, reviews, sourceOrganization, thumbnailUrl, version, video
  - Article: articleBody, articleSection, wordCount
    - BlogPosting
    - NewsArticle: dateline, printColumn, printEdition, printPage, printSection
    - ScholarlyArticle
  - Blog: blogPosts
  - Book: bookEdition, bookFormat, illustrator, isbn, numberOfPages
  - ItemList: itemListElement, itemListOrder
  - Map
  - MediaObject: associatedArticle, bitrate, contentSize, contentURL, duration, embedURL, encodesCreativeWork, encodingFormat, expires, height, interactionCount, offers, playerType, regionsAllowed, requiresSubscription, uploadDate, width
    - AudioObject: transcript
    - ImageObject: caption, exifData, representativeOfPage, thumbnail
    - MusicVideoObject
    - VideoObject: caption, productionCompany, thumbnail, transcript, videoFrameSize, videoQuality
  - Movie: actors, director, duration, musicBy, producer, productionCompany, trailer
  - MusicPlaylist: numTracks, tracks

Class

Properties

Definition from Schema.org

Thing > CreativeWork > MusicRecording

A music recording (track), usually a single song.

Property	Expected Type	Description
Properties from Thing		
description	Text	A short description of the item.
image	URL	URL of an image of the item.
name	Text	The name of the item.
url	URL	URL of the item.
Properties from CreativeWork		
about	Thing	The subject matter of the content.
accountablePerson	Person	Specifies the Person that is legally accountable for the CreativeWork.
aggregateRating	AggregateRating	The overall rating, based on a collection of reviews or ratings, of the item.
alternativeHeadline	Text	A secondary title of the CreativeWork.
associatedMedia	MediaObject	The media objects that encode this creative work. This property is a synonym for encodings.
audio	AudioObject	An embedded audio object.
author	Person or Organization	The author of this content. Please note that author is special in that HTML 5 provides a special mechanism for indicating authorship via the rel tag. That is equivalent to this and may be used interchangabely.
awards	Text	Awards won by this person or for this creative work.
comment	UserComments	Comments, typically from users, on this CreativeWork.
Properties from MusicRecording		
byArtist	MusicGroup	The artist that performed this album or recording.
duration	Duration	The duration of the item (movie, audio recording, event, etc.) in ISO 8601 date forma
inAlbum	MusicAlbum	The album to which this recording belongs.
inPlaylist	MusicPlaylist	The playlist to which this recording belongs.
creator	Organization	CreativeWork.
dateCreated	Date	The date on which the CreativeWork was created.

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

Wikidata

The free knowledge base that anyone can edit

Anja Jentzsch - @anjeve

Hasso Plattner Institute, Potsdam, Germany

HPI Hasso Plattner Institut
IT Systems Engineering | Universität Potsdam

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.

Wikidata to the rescue!

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About this Module

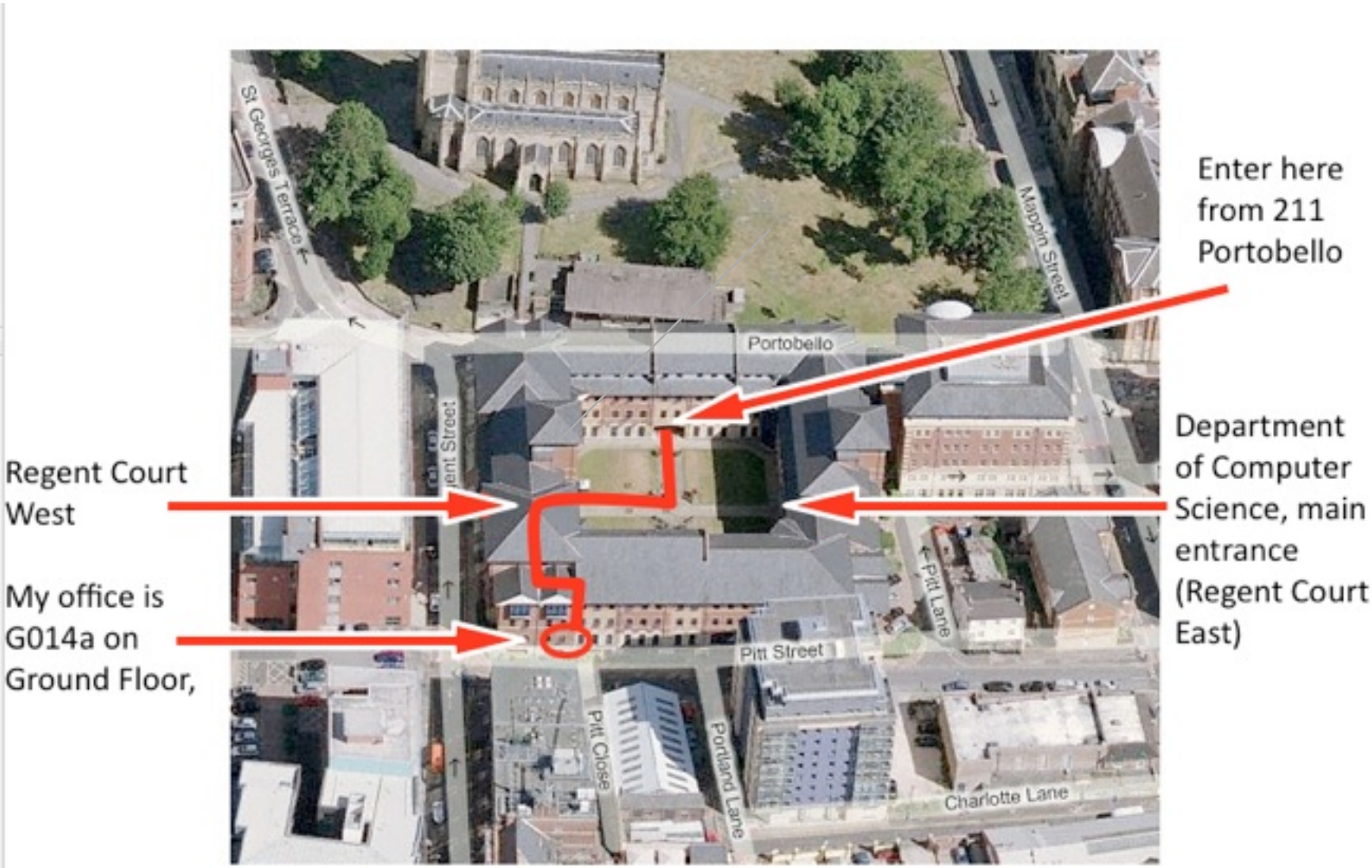
Logistics

- Lectures:
  - Fridays 11.00-12.50
    - You should know that by now!
- Lab Classes:
  - Friday at 5 pm (SORRY!!! NOT MY FAULT!!!)
    - Starting in Week 2

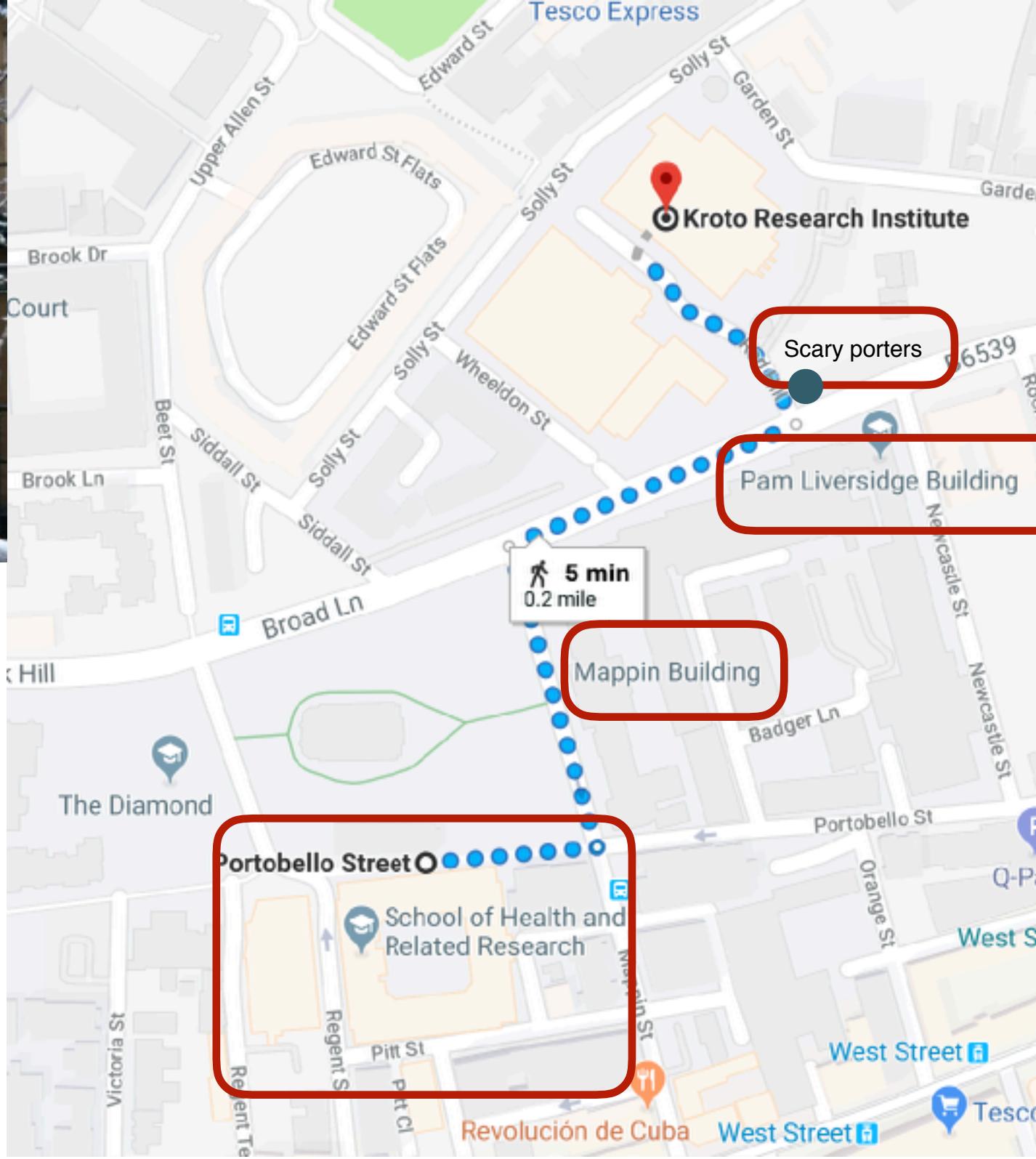
- Office hours: in Go14a Regent Court West
  - Thursday 14.00: by **appointment only!!!!**

Where to find Vita and Me

You can also exit the Lewin Lab from the Bottom - my office is 3rd on the right



But…
From
28.2.2018…



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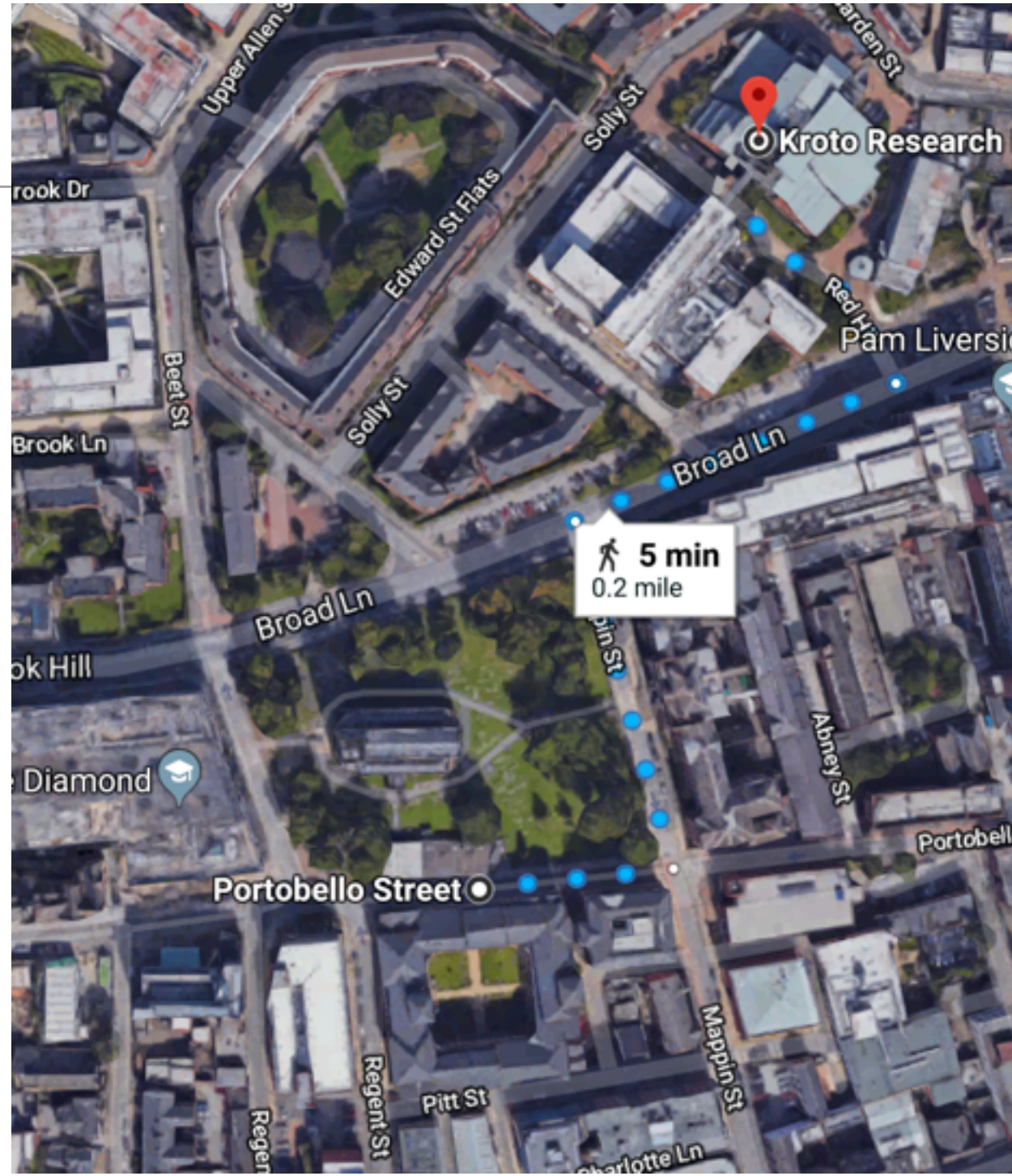
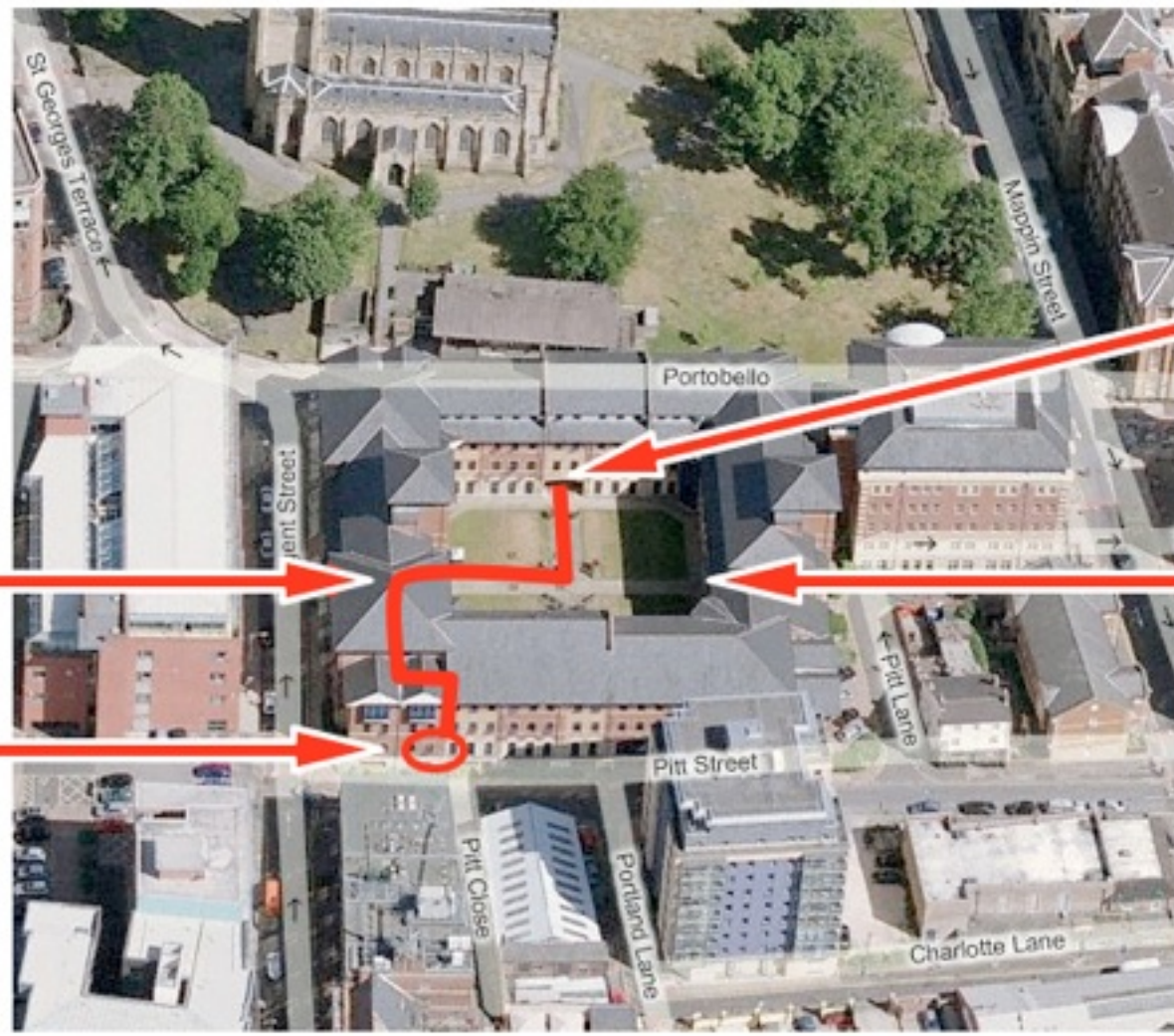


My office



Enter here from 211 Portobello

Department of Computer Science, main entrance (Regent Court East)

Regent Court West

My office is G014a on Ground Floor,

Reading Material

- Lecture notes
- Lots of Web documents to read
  - This is module on Intelligent Web!
- Any book about HTML, Javascript, MySQL and PHP will do

- Join the Facebook group:
  - https://www.facebook.com/groups/652598341469951/
  - Where you and I can post interesting articles, news etc.
  - Not an official module resource, though (use MOLE!).
  - It is also to keep in touch after the end of the module
    - in case there are relevant news - e.g. job opportunities I become aware of

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Assessment

- One project will constitute 100% of the assessment
  - Released at end of Week 3
  - Two submissions:
    - First part of assignment (preliminary feedback)
      - Deadline: week 7 (Easter)
      - Submission via Mole
      - 1:1 feedback end of Week 8 (after Easter)
      - Informal marks
  - Final submission (100% of marks)
    - The whole assignment (including the revised part 1)
    - Deadline: Friday of week 11 at 23:59:59

Groups

- Assignment is to be done in groups
  - Groups must be composed of a **max of 3 people**
    - No groups of >3 are allowed **for any reason**

- YOU are allowed to CHOOSE YOUR GROUP!
  - However
    - I may decide to step in and pair people together
      - if they are unable to find a suitable group
    - I may decide to add a third member to a group of two
      - if I think that a third member is needed

Assessment FAQ

- To be done in groups of **max three (3) people**
- **START forming the group today!!!**
- FAQs:
  - FAQ 1: can we do the assignment in a group of four (4)?
    - Answer: no
  - FAQ 2: can we do the assignment in a group of four (4)?
    - Answer: no
  - FAQ 3: can we do the assignment in a group of four (4)?
    - Answer: no
  - FAQ 4: but...?
    - Answer: no
  - FAQ: can I do the assignment on my own?
    - Answer: yes, but I think it is a bad idea
  - FAQ: what if I am unable to find a group?
    - Answer: I will not step in and find a group for you (although I will try to help you)

Assessment (3)

- FAQs (ctd):
  - FAQ 4: can we have an extension?
    - Answer: no
  - FAQ 5: but my cat was ill?
    - Answer: poor cat
  - FAQ 6: but I have **proven** medical reasons
    - Answer: yes you can
  - FAQ 7: can we disband the group if it does not work?
    - Answer: yes but you will not be generally allowed to join another group
- Please always contact me **well in advance** for any problem or clarification

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Groups, oh no!

- Every year at least 3 groups have serious problems during the first assignment
  - I have head this several times:
    - Person 1:
      - My partner
        - did not contribute at all
        - Was never present when we decided to meet
    - Person 2:
      - I was busy, my cat was ill, I had a dentist appointment, I actually attended once
- Can you tell me where the problem is?

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Groups? Oh no!

- Groups of 3:
  - 2 member says:
    - Our partner did not contribute at all
      - He is always silent and sometimes he does not even come to the meetings
  - The other member says:
    - My partners work very fast, talk a lot among themselves and never let me understand what they do. They are probably better than I am
- Can you tell me where the problem is?

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Groups? Oh No!

- One member says:
  - I have worked for many years as software developer in companies, I know how to develop a project. I will set out a plan for everybody by using a well established strategy that I have devised myself based on best practices
- The other members say nothing but in a while stop coming to the meetings. They are simply lazy and not committed to their study
- The group splits (yes you can split a group)
- Who do you think got the best marks?

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Groups? Yes, groups

- Select your partner(s) with care
  - Ask them about their marks
    - Do it!!!
    - Choose someone with marks similar to yours
      - Do not try to be with better people to try to scrape better marks
        - it does not work!
  - Do not chose someone just because you fancy them
    - Find a boy-/girl-friend another way
- Be very careful when you work in a group
  - Listen to any sign of distress or disinterest
    - Talk to your partner frankly and honestly
    - Discuss with me any doubt
      - That is not being nasty to your partner!!

What if I cannot find a group?

- Start looking for a group NOW!!!
- Ask around
- Socialise
- Fill the appropriate form
- Talk to me asap
  - We will have a dating session for people who are without group
- IF ALL FAILS you may be required to do the assignment on your own
  - Please make sure that this does not happen

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Start forming your group TODAY!!

Every year at least one person is left out, ends up doing the assignment by themselves(and generally fails)

Every year at least two groups are totally dysfunctional because they did not choose with care/were late/were just checking if partners were good looking

Register your group NOW!

- Every year 3 or 4 people cannot find a reasonable group because they left this to too late
- One person always ends up doing it on their own
- THIRD YEARS cannot group with MSc students

https://docs.google.com/spreadsheet/ccc?key=0ApRYU-DxjhLDdGVMb1lDd083MVJnSC13OGkwdkZDd2c&usp=sharing

	A	B	C	D	E
1	**First ASSIGNMENT**				
2	PLEASE NOTE: MASTERS STUDENTS CANNOT GROUP WITH 3RD YEARS!				
3	**Group Name**	**Member 1**	**Member 2**	**Member3**	contact email for the group
4					
5					
6					
7					
8					

Looking for partners?

- No worries. Register now
- And contact the available people immediately!!

21				
22	**list your name below if you are looking for partners**			
23	PLEASE NOTE: MASTER'S STUDENTS CANNOT GROUP WITH 3RD YEARS!			
24		**Name**	**Course**	email address
25				
26				
27				
28				
29				

How to pass

- Come to the lectures
  - If you do not understand, tell me
  - Feel free to ask questions at any time
- Come to the lab classes and do all the exercises immediately
  - Most lab classes give you a piece **to use in the assignment**
    - Complete the assignment every week

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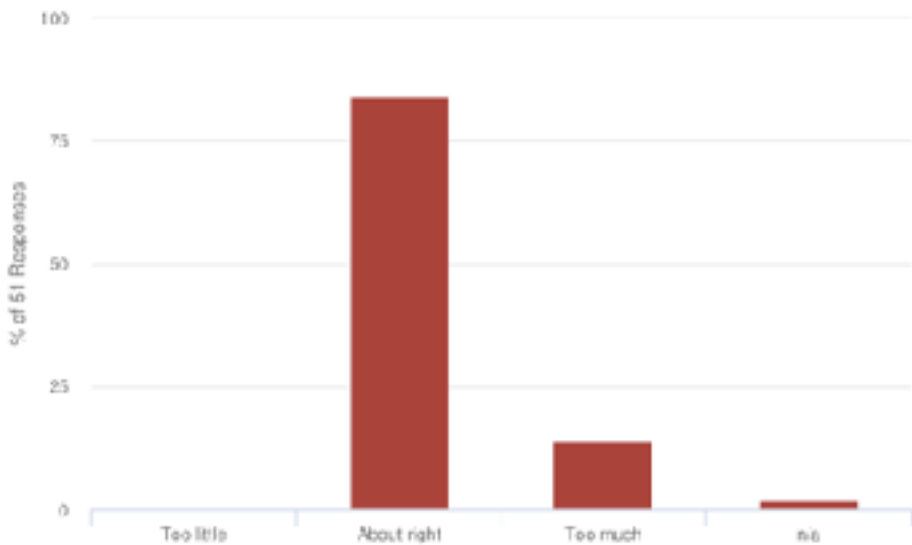
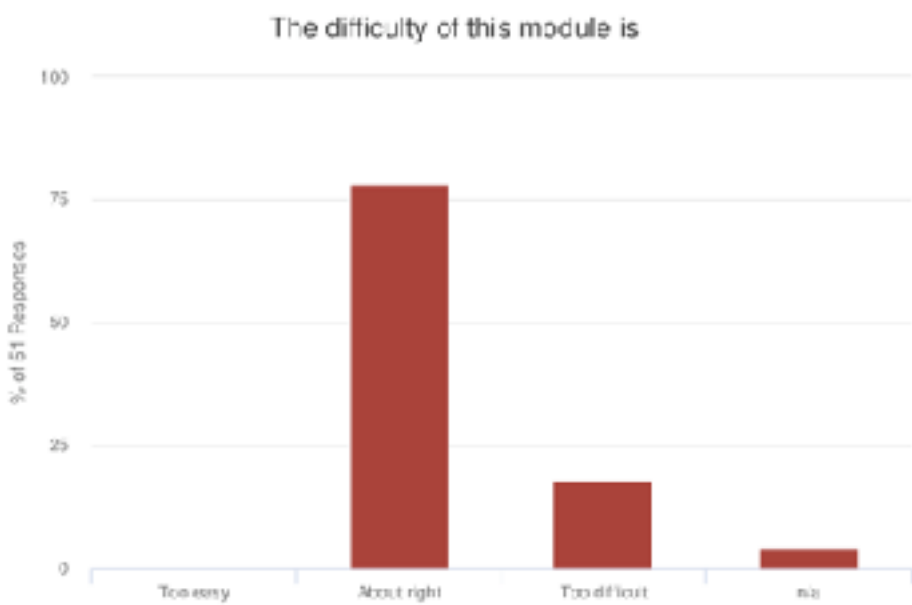
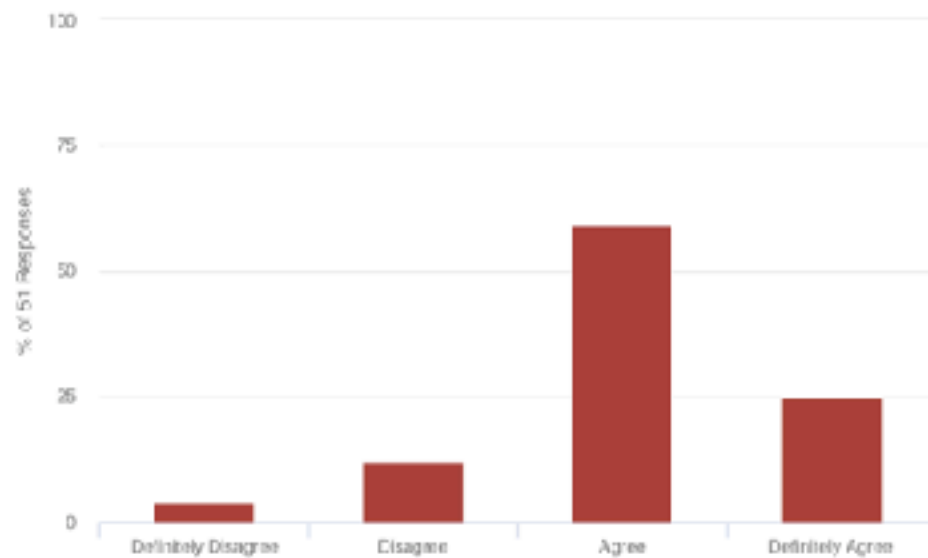
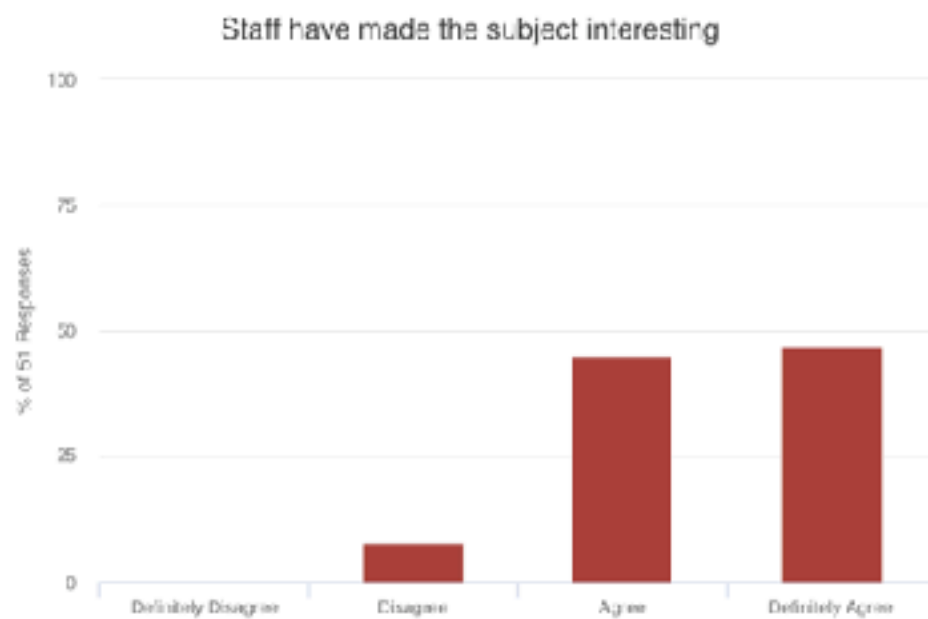
They say about us









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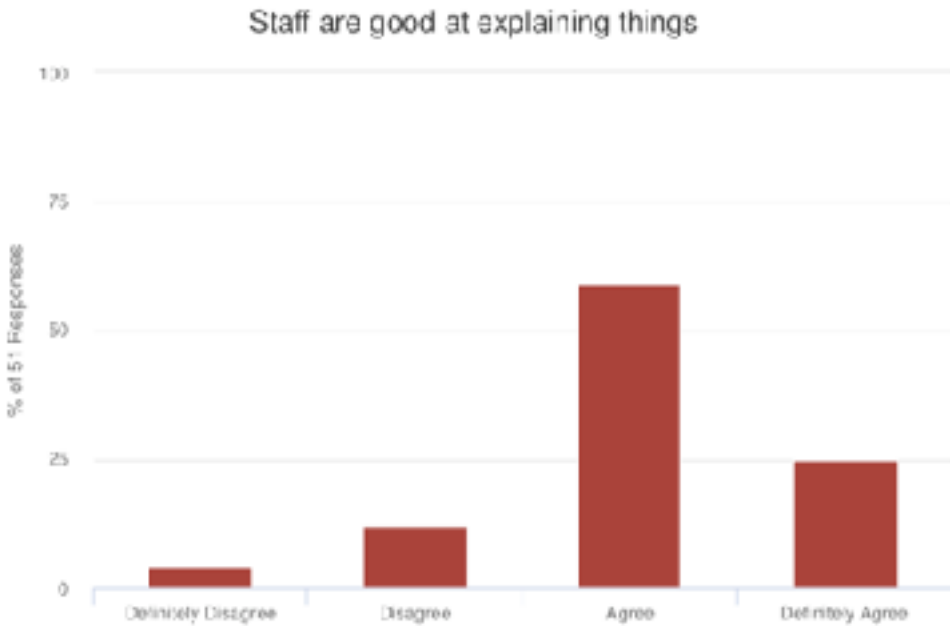

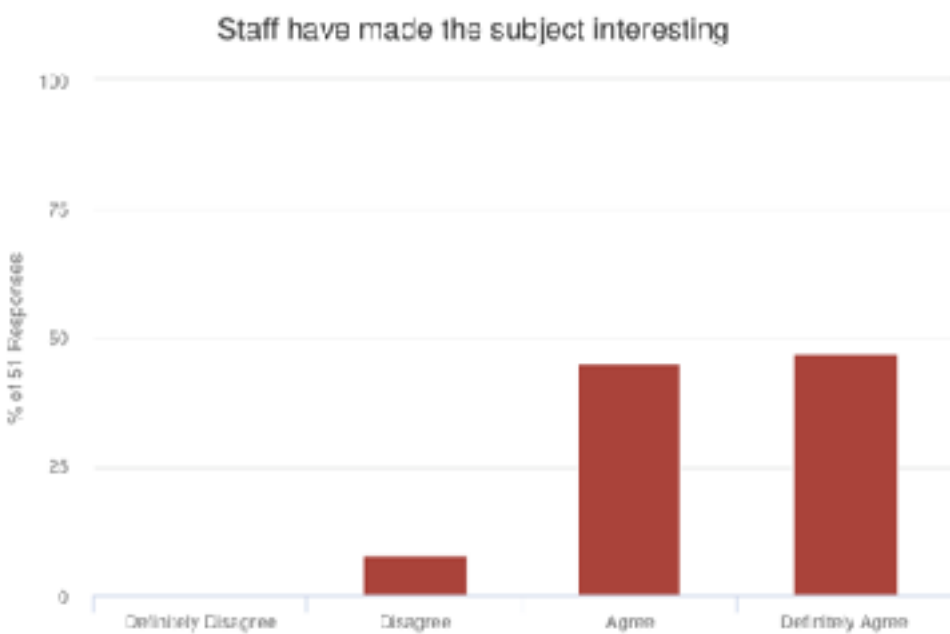

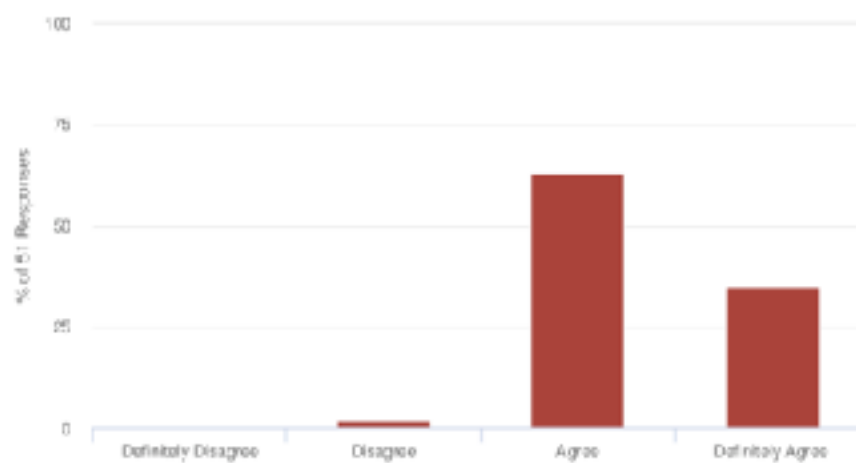

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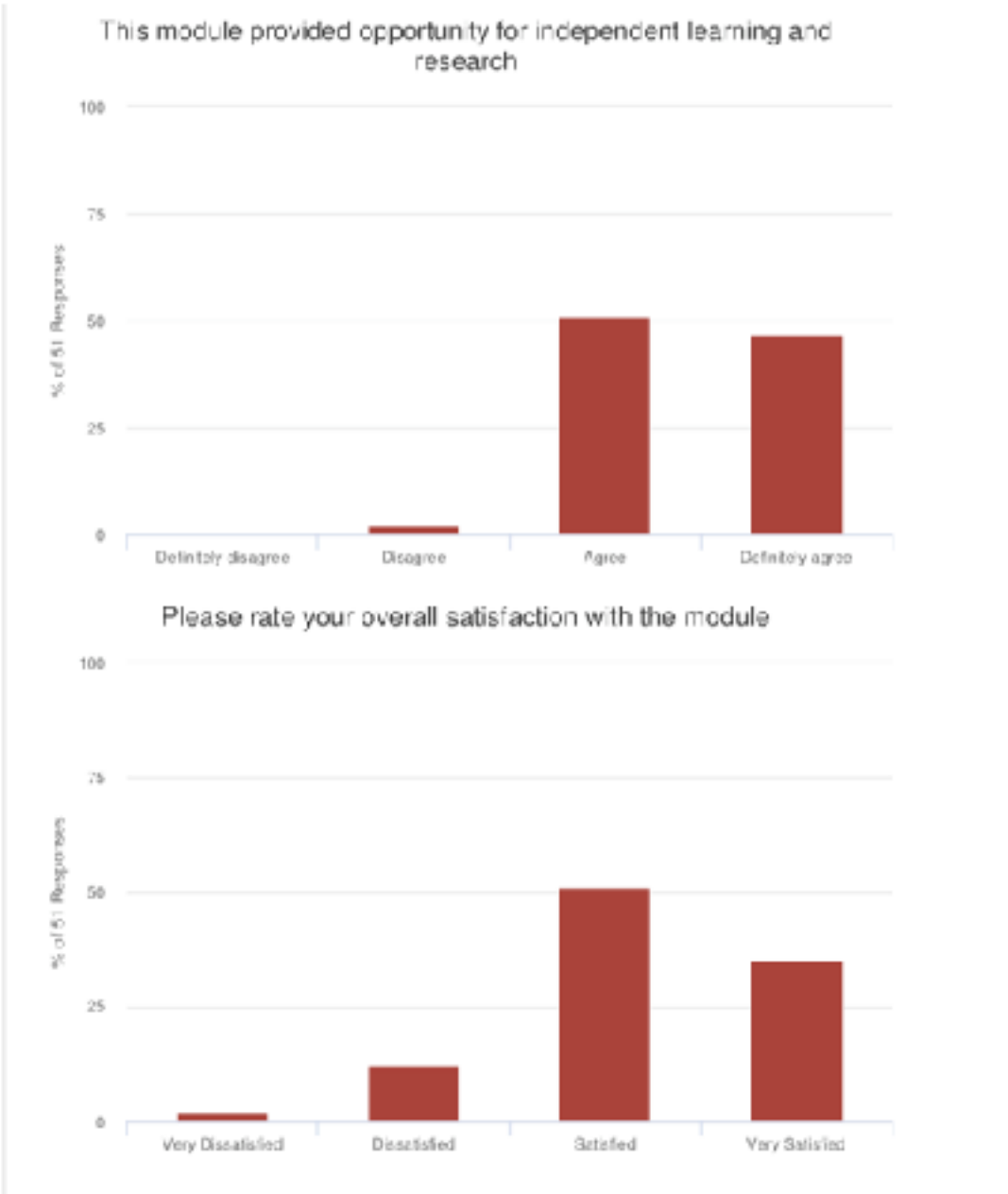
This module provided opportunity for independent learning and research
100
75
50
25
0
% of 61 Responses
Definitely disagree
Disagree
Agree
Definitely agree
Please rate your overall satisfaction with the module
100
75
50
25
0
% of 61 Responses
Very Dissatisfied
Dissatisfied
Satisfied
Very Satisfied

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Some past experience

I get 5 big assignments at the same time now in the second semester. It's really too difficult to handle all assignments well for me because the time seems too limited

I feel that two hours of lectures were not enough to cover the subject in the detail I would of liked. Please increase it to 3 - 4

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Assignment too intensive

- Arguably the best module I have taken throughout my time at uni.
- That said,
  - The workload for the assignment was grossly underestimated.
  - The learning curve for NodeJS is very steep, and the "30hours" work per person estimate is miles off.
  - I'm in a team of three people, all of us have comfortable performed to a first class standard throughout our entire degree
    - and we easily spent around 60+ hours each on the initial stage of the assignment.

The goals of the assessment is clear but overkill and requires as much work as a dissertation coding

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Well, don't do that!

- The assignment is largely open ended.
- Please keep it in proportion to the credit value
- Do not try to build a system with infinite features
- Just make an excellent work by keeping to the letter of the assignment

(That said, some of last year's solutions were fantastic!)

Always ASK!!!

- One year it became clear that the Chinese group had issues in understanding the second assignment
  - I organised a session in Chinese
    - To explain the assignment
    - To allow for questions in a familiar language
- I cannot promise this will be possible this year or for other languages
  - But if you feel that there is something that could help, try and ask
    - Do not think it is impossible
      - I do not speak Chinese but was able to organise a session in Chinese

What do students do

- After this module?

17th November 2011

DCS students win Appathon and meet the Prime Minister at Number 10

Three of our 4th year students (Sam Oakley, Luke Stringer and Mark Dessain) have won a competition to design a m
involving 850 students from across the UK.

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Meet Paul

Paul Ridgway 1st

Co-Founder and Supreme Overlord at The Floow Limited

Sheffield, South Yorkshire, Unite

Current The Floow Limited

Previous Abstract Void, Junior Pi

Education The University of Sheffi

Send a message

THE FLOOW Geographical Reach

uk.linkedin.com/pub/paul-ridgway/22/45b/5a

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IW: The programme

- Week 1: Introduction to the module: the Web, past, present and future
- Week 2: Accessing the web; client server architectures; Apache Tomcat, NodeJs
- Week 3: Flexible client server architectures with Json, Ajax and Express
- Week 4: Building Progressive Apps
- Week 5: Developing Hybrid Apps
- Week 6: Socket.io, WebRTC

IW (2)

- Week 7: Search engines, big data
- Easter Holidays
- Week 8: Understanding Web 2.0+
- Week 9: The Web of Data
- Week 10 The future of the Web - three invited guests (former students who have made a fortune using Web Tech)

Maybe you should be there?

MSc Only or 3rd year ITMB

- Week 1: Introduction to the module: the Web, past, present and future
- Week 2: HTML and Javascript
- Week 3: Javascript
- Week 4: JQuery and XML
- Week 5: Accessing the web; client server architectures, NodeJs
- Week 6: Flexible client server architectures with JSON, Ajax and Express

Web Technologies 6517

Web Technologies 6517

- Week 7: Socket.io, WebRTC and beyond
- Easter Holidays
- Week 8: Search engines and big data
- Week 9: Understanding the current Web
- Week 10: The future of the Web - with invited guests (lecture common to the Intelligent Web **ON FRIDAY at 11**)

If you are a 3rd year student from abroad (e.g. USA) please come and see me to discuss

IF YOU ARE A MSC student

- You must ALSO come to the Web Technologies lectures in weeks 2-4 (or watch the videos if there is a lecture clash)
  - Thursdays 11-13 LT14 at 8 Mapping
  - THIS IS A REQUIREMENT FOR YOUR MODULE
  - NO MATTER IF YOU THINK YOU KNOW THE BASICS OF WEB TECHNOLOGIES

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Questions?