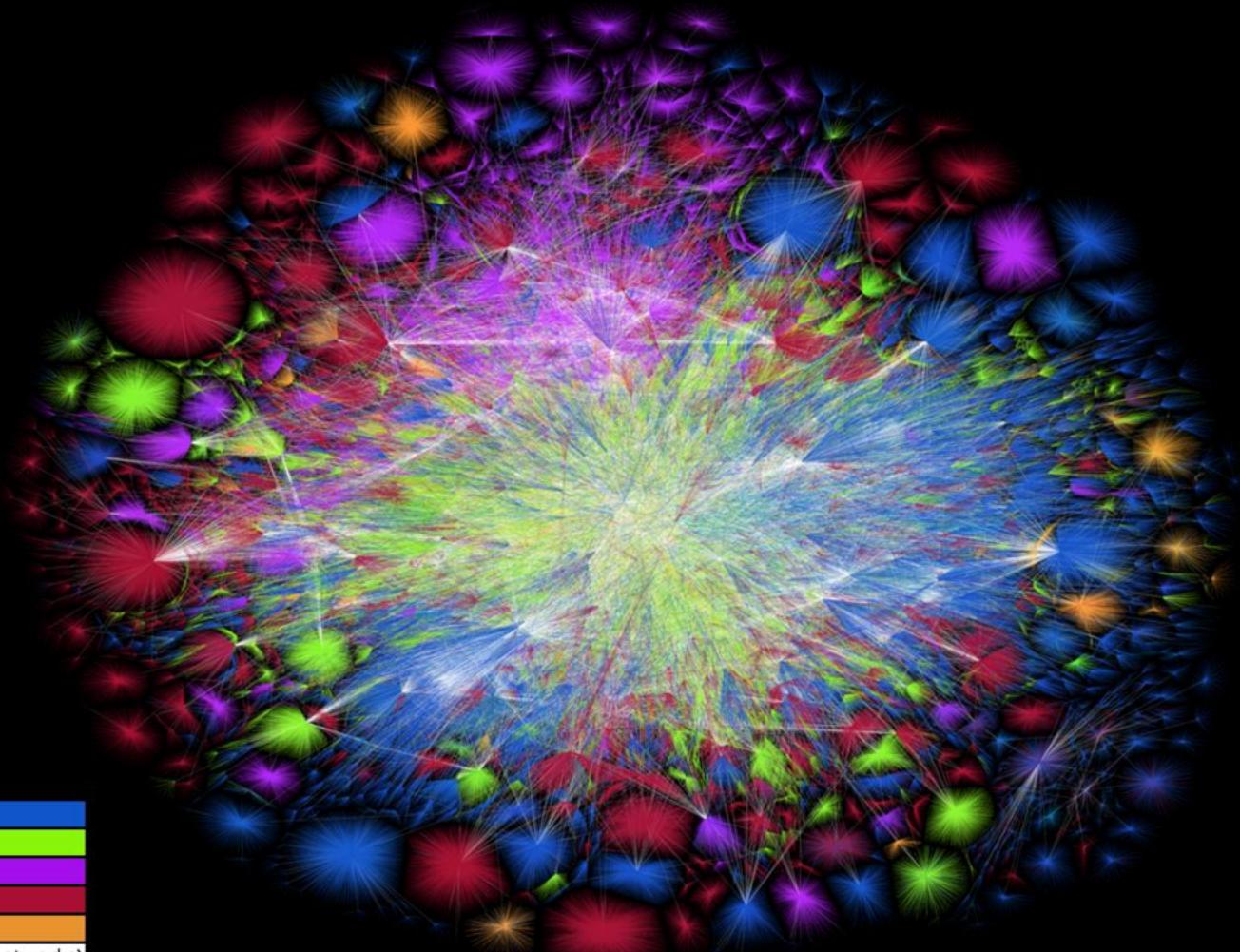


# The Web

I360 Web Design



North America (ARIN)

Europe (RIPE)

Latin America (LACNIC)

Asia Pacific (APNIC)

Africa (AFRINIC)

"Backbone" (highly connected networks)

6 August 1991, CERN

# World Wide Web

The WorldWideWeb (W3) is a wide-area [hypermedia](#) information retrieval initiative aiming to give universal access to a large universe of documents.

Everything there is online about W3 is linked directly or indirectly to this document, including an [executive summary](#) of the project, [Mailing lists](#) , [Policy](#) , November's [W3 news](#) , [Frequently Asked Questions](#) .

## What's out there?

Pointers to the world's online information, [subjects](#) , [W3 servers](#), etc.

## Help

on the browser you are using

## Software Products

A list of W3 project components and their current state. (e.g. [Line Mode](#) ,[X11 Viola](#) ,[NeXTStep](#) ,[Servers](#) ,[Tools](#) ,[Mail robot](#) ,[Library](#) )

## Technical

Details of protocols, formats, program internals etc

## Bibliography

Paper documentation on W3 and references.

## People

A list of some people involved in the project.

## History

A summary of the history of the project.

## How can I help ?

If you would like to support the web..

## Getting code

Getting the code by [anonymous FTP](#) , etc.

Q: Who invented the world wide web?



# Sir Tim Berners-Lee

Tweeted “This is for everyone.”  
at the London Summer Olympics 2012

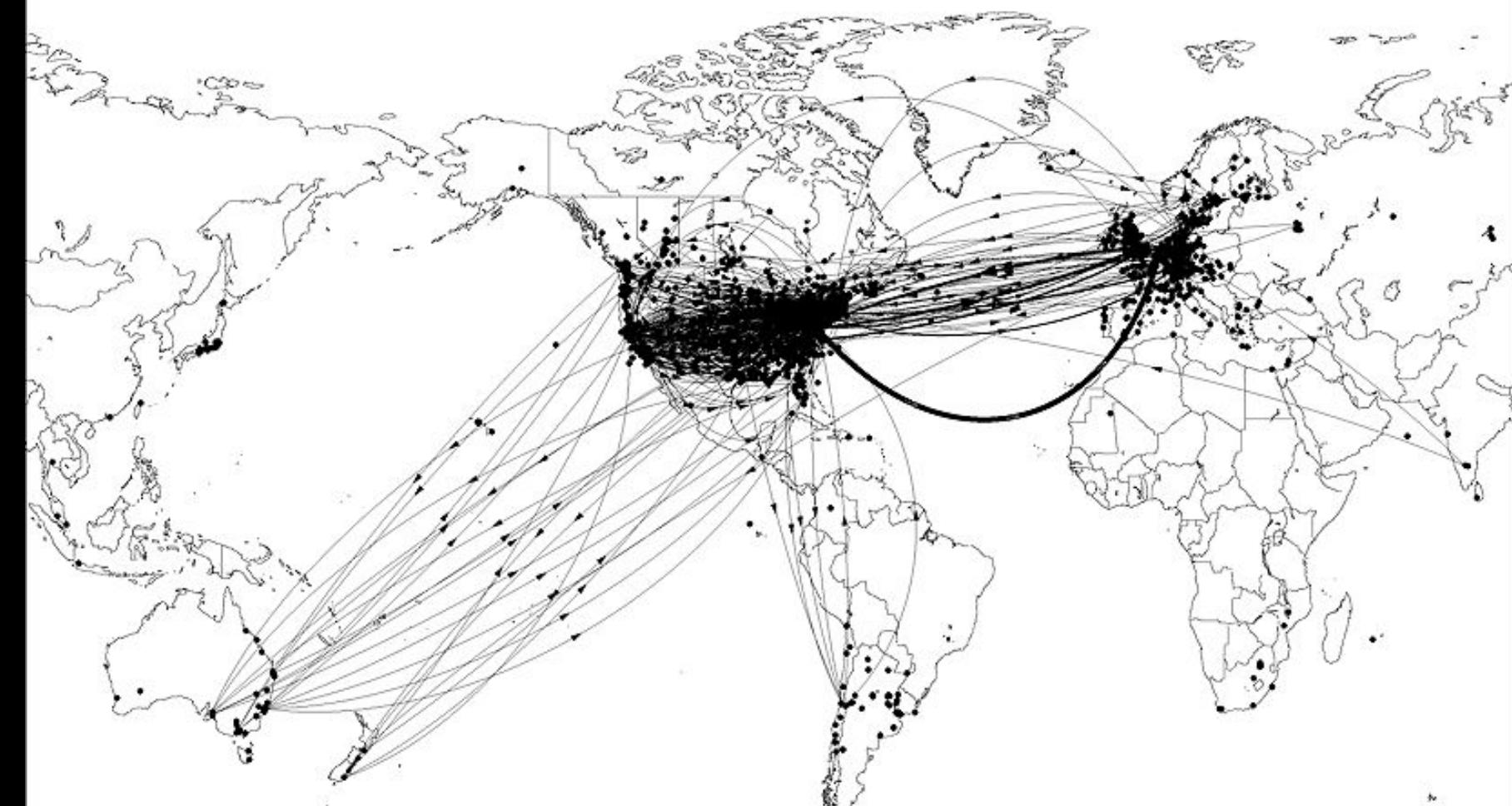


What is the difference between  
the internet and the web?

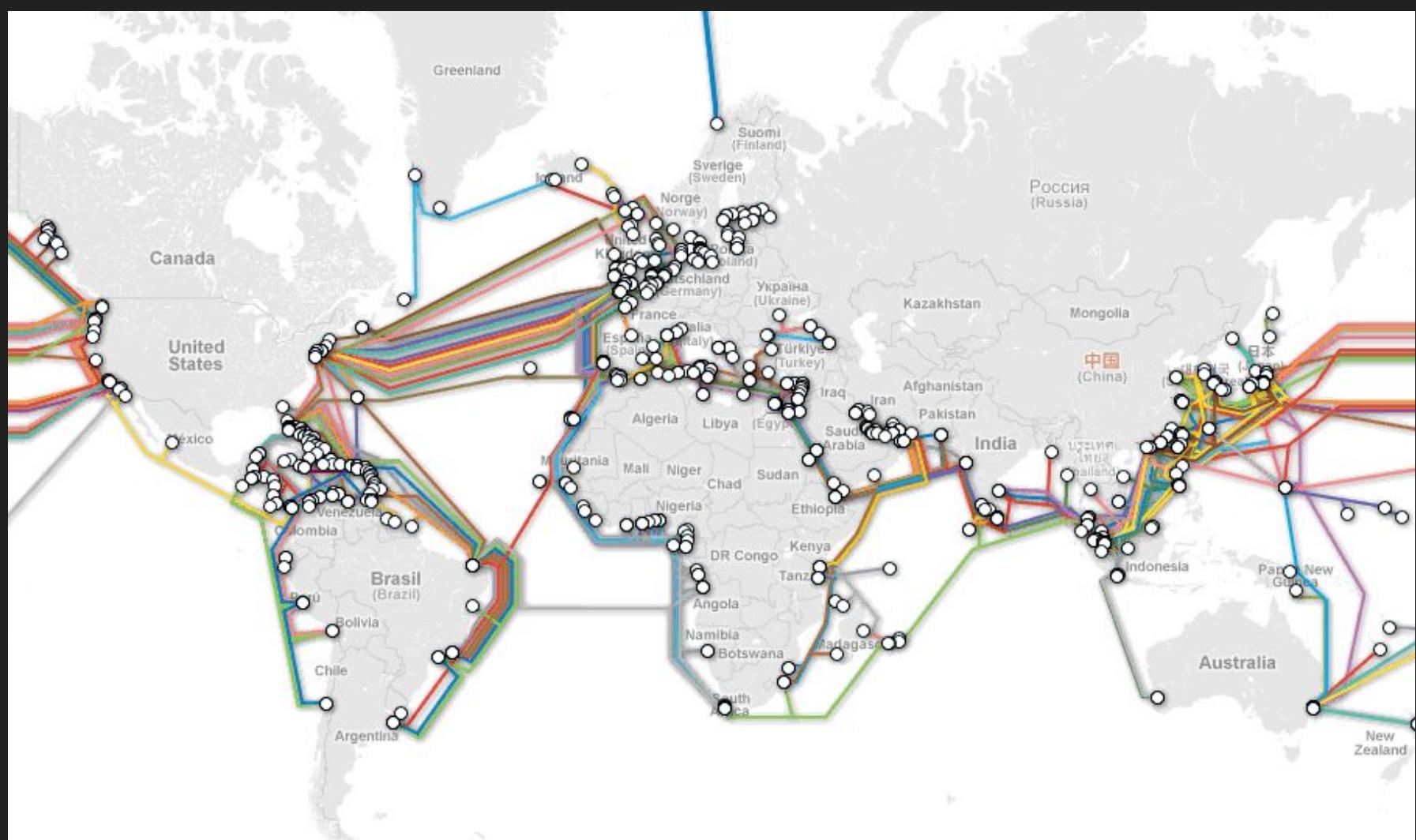
1969



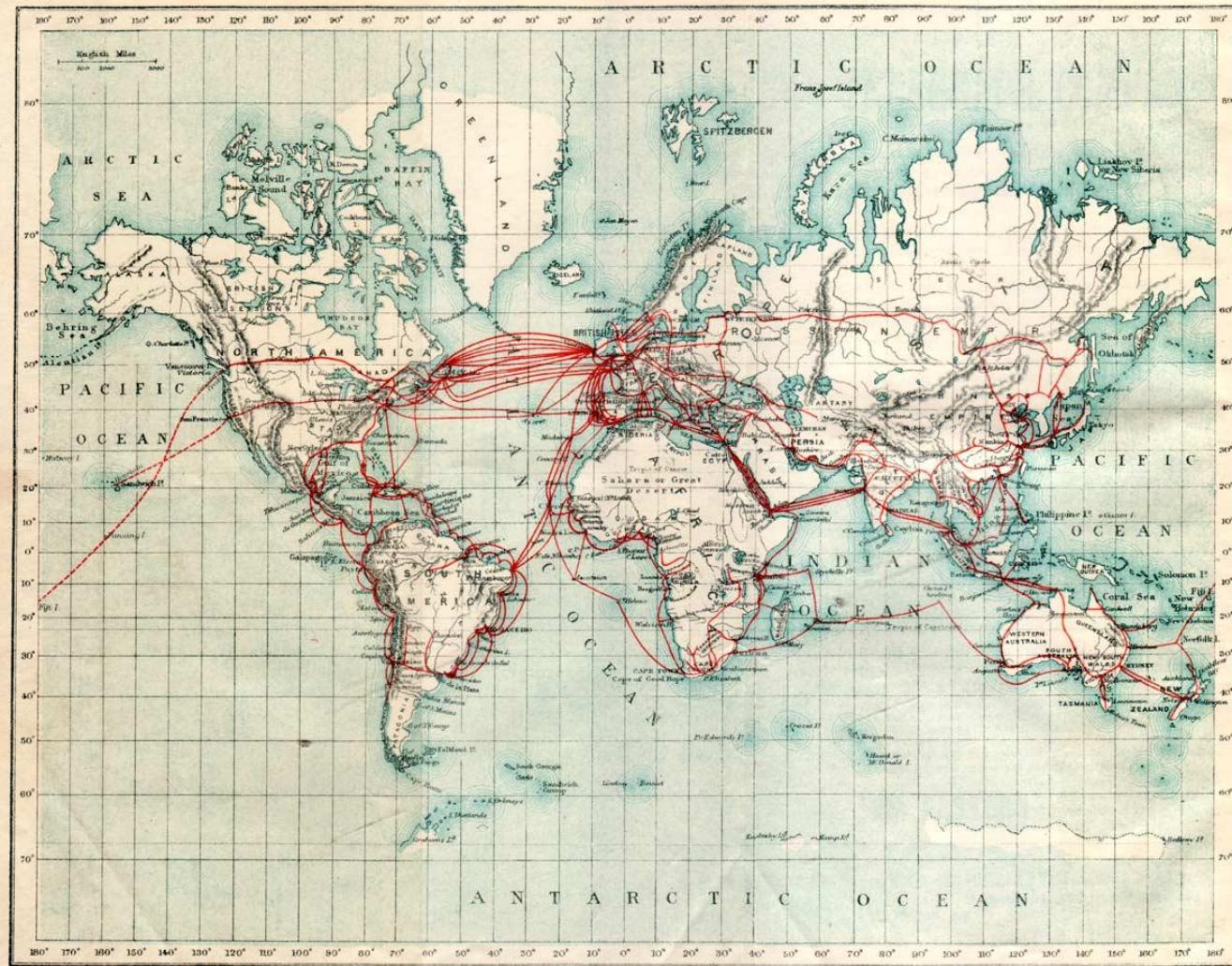
1993

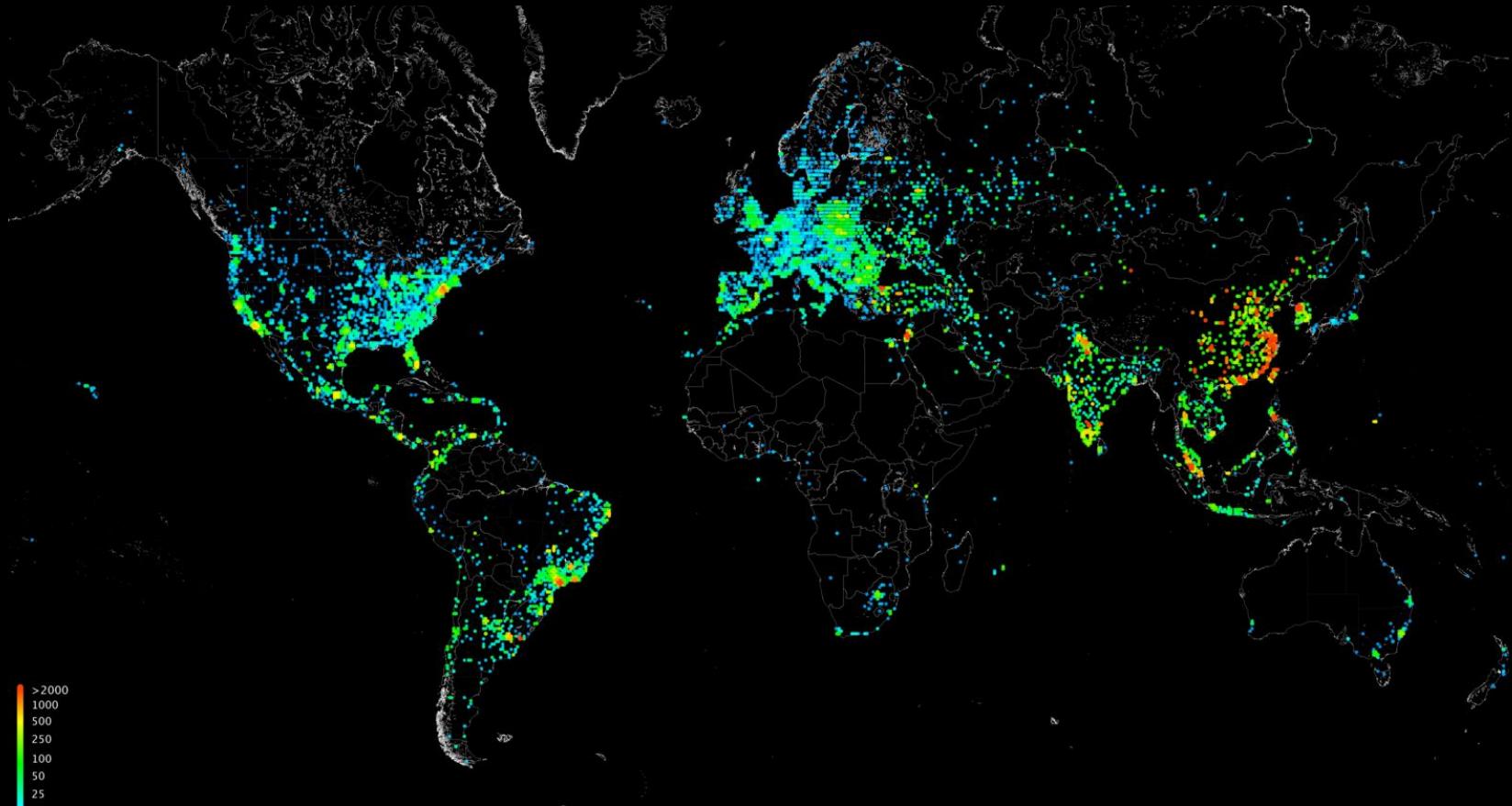




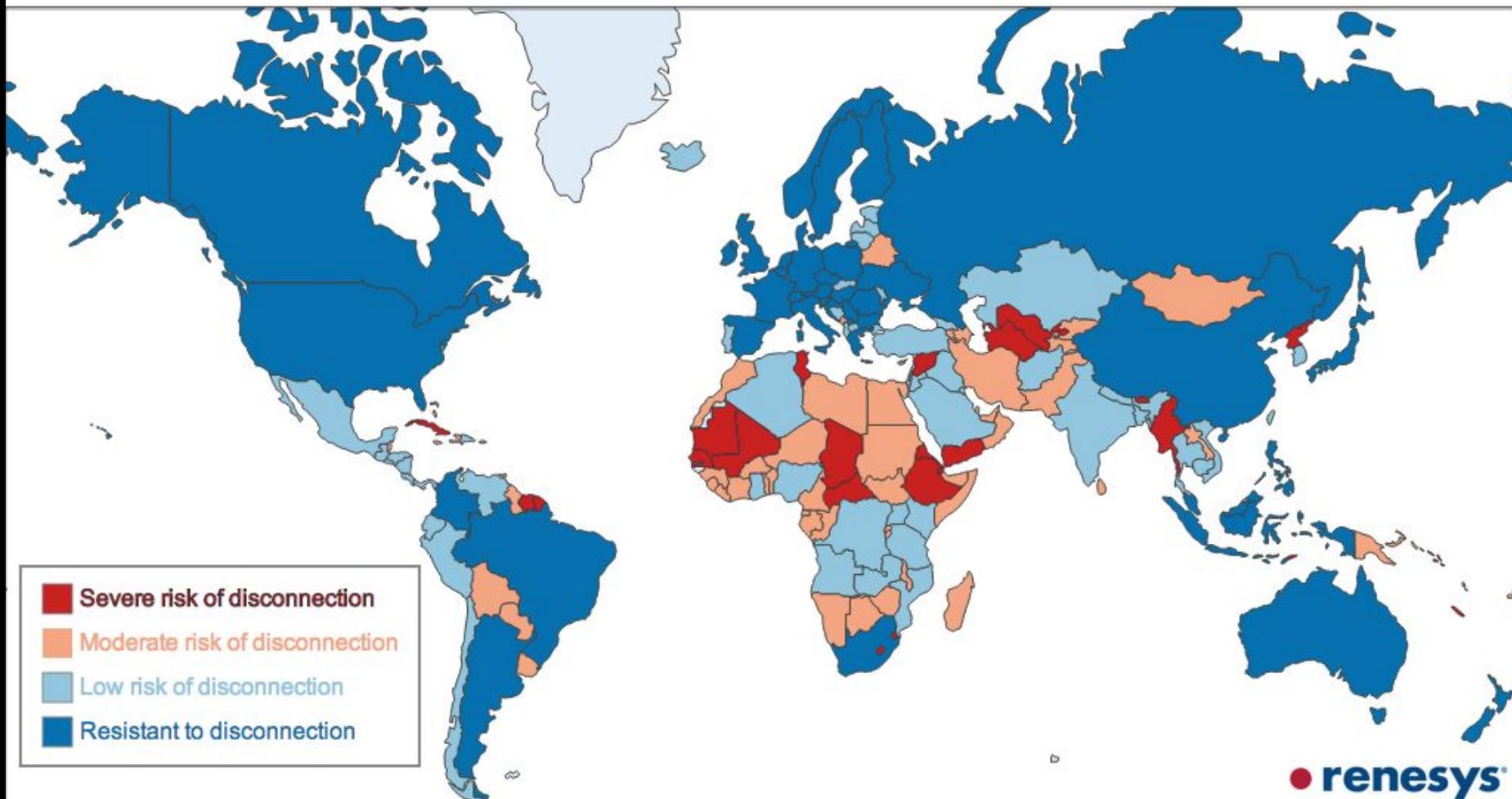


EASTERN TELEGRAPH CO'S SYSTEM AND ITS GENERAL CONNECTIONS.

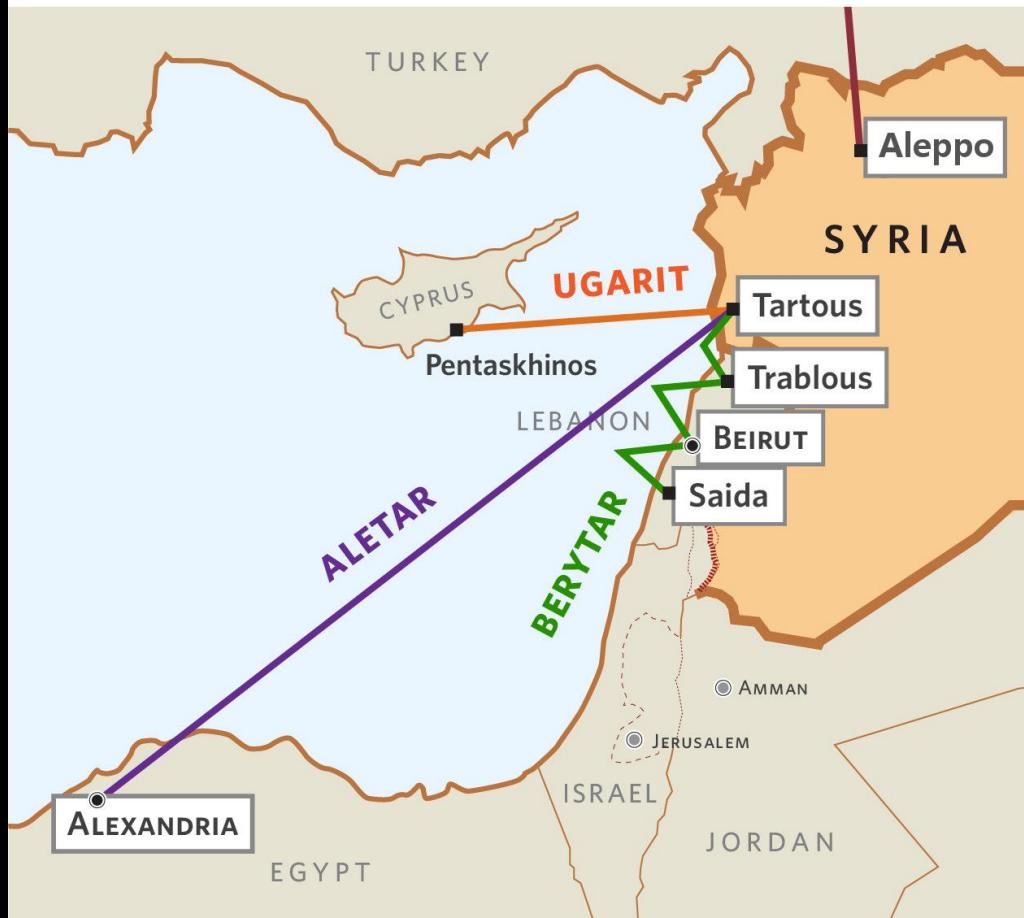




## National Internet Diversity at the International Frontier - February 2014



## Syria's Physical Internet Connections • **renesys**



In April 2013, Syria's largest city, Aleppo, disappeared from the internet for several hours, one of several outages that have occurred during the civil war there. The southern parts of Syria receive internet access from undersea fiber optic cables, but Aleppo accesses the internet via a land connection to Turkey. It's not clear if the outage was due to accidental damage from fighting in the area, or whether the regime of Bashar al-Assad had deliberately disrupted rebel-held Aleppo's internet access. As the Washington Post's Andrea Peterson puts it, "Internet outages in Syria have a curious history of happening at times convenient for the Assad regime."

<https://www.vox.com/a/internet-maps>

# Net Neutrality

*December 14, 2017*

“The Federal Communications Commission's party-line vote Thursday to dump the Obama-era rules, which required internet service providers to treat all Web traffic equally, opens the door for companies like Verizon and AT&T to experiment with new business models free from government regulation.”

<https://www.politico.com/story/2017/12/14/how-net-neutrality-loss-change-internet-212671>

# Net Neutrality

**Basic Internet Service Package** **\$79.99\***

Includes 500 MB of free transfers to non-peering websites at full speed. Limited to 128 kbps thereafter.

**Social Media**  **\$9.99\***

Includes a massive extra 1000 MB a month to non-peering and non-selected websites. Limited to 256 kbps thereafter.

**Shopping**  **\$9.99\***

Save money. Shop online. All your favourite things, secure and fast. Includes Internet Banking from over 20 financial institutions.

**Streaming**  **\$9.99\***

Includes free Hulu subscription. Enjoy exclusive content from your favourite networks.

**VIP Package** Choose 3 of your favorite categories! **\$29.99\***

**Streaming** **News** **Social Media** 3 favorites

**All Access Package** Get all of your favorite categories! **\$129.99\***

**Music** **Social Media** **News** **Streaming** **Shopping** get it all

**Recharge** Your full-speed quota wasn't enough? A massive 2000 MB for access to your company's VPN at full speed. For accessing your friends' non-peering websites at full speed. For getting your emails faster and the included limit didn't cut it. Or if you're a web designer and need some extra buffer. Whether it be the world wide web, VPN or email, we have you covered.

Listen to your favourite music. Includes three months of emusic. **\$9.99\***

\*billed monthly

Not fiction. This is an example of the model currently in place in Portugal where net neutrality rules do not exist.

Understand more about how Net Neutrality works:  
<https://www.nytimes.com/video/us/100000005564560/what-is-net-neutrality.html>

# So what now?

Do you believe that the internet is like a **utility**? Do you believe that internet rights are like **civil rights**? Regardless of your answer, you need to pay attention to this topic in the news. As people planning to work in fields closely tied to the internet, these rules will impact you, for better or worse, in your careers, as well as in your daily lives.

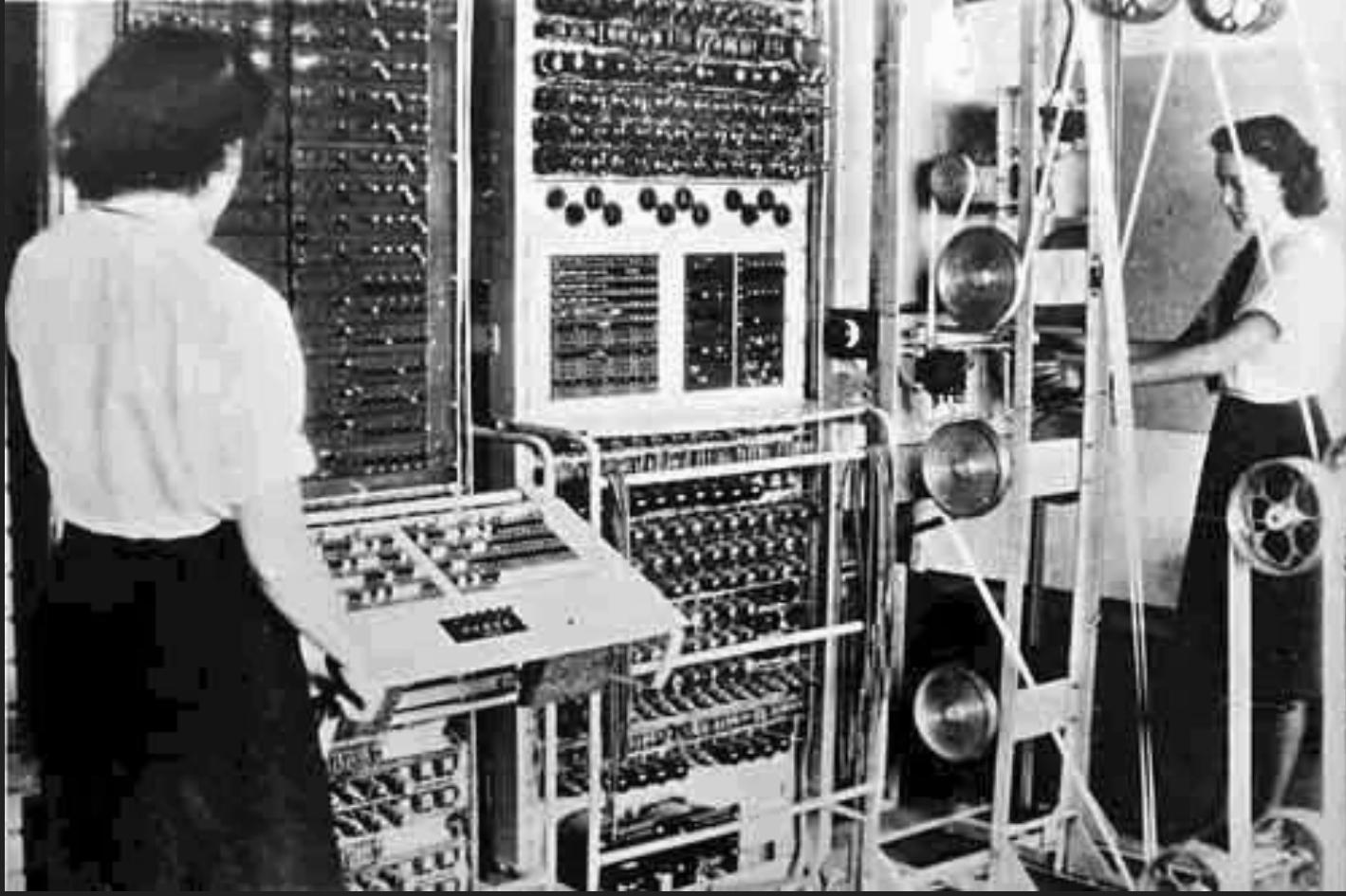
*Start here:*

<https://www.cnet.com/news/net-neutrality-is-now-really-officially-dead-open-internet-congress-now-what/>

Let's look at changes in computing...

A black and white portrait of Ada Lovelace, a woman with dark hair pulled back, looking slightly to her right with a thoughtful expression.

Ada Lovelace



'Colossus' electronic computer in 1946

32

9/9

0800 Antran started  
 1000 " stopped - antran ✓  
 1300 (032) MP-MC  
 (033) PRO 2  
 1300 (032) 1.2700 9.037 847 025  
 1300 (033) 2.130476415 ✓  
 1300 (033) 2.130676415  
 1300 (033) 4.615925059(-2)  
 const const

Relys 6-2 in 033 failed special speed test  
 in relay

Relay 2145  
Relay 3370

1100 Started Cosine Tape (Sine check)  
 1525 Started Multi Adder Test.

1545



Relay #70 Panel F  
 (moth) in relay.

1600 First actual case of bug being found.

1600 Antran started.

1700 closed down.

Admiral Grace Hopper



1970s



1984



# 1990s

<http://www.warnerbros.com/archive/spacejam/movie/jam.htm>



# 2000s

The screenshot shows the YouTube homepage. At the top, there's a navigation bar with links for HOME, FAVORITES, MESSAGES, VIDEOS, and MY PROFILE. Below the navigation is a login form with fields for Username and Password, and buttons for Log In, login, and register. Underneath the login form, there's a section where users can specify their gender (Male or Female) and seek status (Seeking or Not seeking), along with age filters (Everyone between 18 and 45). A large "HomePage" link is prominently displayed below the login area.

[HomePage](#) | [RecentChanges](#) | [Preferences](#) | [Random Page](#)  
You can [edit this page right now!](#) It's a free, community project

Welcome to [Wikimedia](#), a collaborative project to produce a complete encyclopedia from scratch. We started in January 2001 and already have over 6,000 articles. We want to see so let's get to work—anyone can edit any page—copyedit, write a little, write a lot. See the [Wikimedia FAQ](#) for information on how to edit pages and other questions. If you're visiting for the first time, [welcome!](#) The content of Wikimedia is covered by the [GNU Free Documentation License](#).

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[Astrophysics and Astrophysics](#) – [Biology](#) – [Chemistry](#) – [Earth Sciences](#) – [Mathematics](#) – [Philosophy](#) – [Physics](#) – [Science](#) – [Statistics](#)

**Social Sciences**  
[Aeronautics](#) – [Aerodynamics](#) – [Anthropology](#) – [Archaeology](#) – [Countries of the world](#) – [Economics](#) – [Geography](#) – [History](#) – [History of Science and Technology](#) – [Language](#) – [Law](#) – [Psychology](#) – [Sociology](#)

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**Other Category Schemes**  
[About Wikipedia category schemes](#) – [Library of Congress category scheme](#) – [Deey Decimal System](#) – [Wikimedia arranged by topic](#) – [Year in Review](#) – [Historical anniversaries](#) – [Biographical listing](#)

**International Wikipedias**  
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Today is Friday, July 27th, 2001, seventeen (Pacific Standard Time)

[Edit](#)

The screenshot shows the Thefacebook homepage. At the top, there's a logo of a person's head, followed by the text "[ thefacebook ]". Below the logo, there are links for login, register, about, and faq. The main heading is "Welcome to Thefacebook!" with a sub-heading "[ Welcome to Thefacebook ]". A text block states: "Thefacebook is an online directory that connects people through social networks at colleges. We have recently opened up Thefacebook at the following schools:" followed by a list of college names.

Alabama A&M • Alabama Huntsville • Aquinas • Art Chicago  
Bellarmine • Belmont Abbey • Bethel KS • Bethune Cookman  
Brevard • Brookdale • Caldwell • Catawba • Cedar Crest • Central College  
Clarke • COE College • Concord • Concordia MN • Concordia NY  
CSU East Bay • CSU Mont. Bay • CUNY Lehman • Delaware State  
Delaware Valley • Detroit Mercy • Dowling • Erskine • Evergreen  
Fayetteville • FL Southern • Fort Hays • Francis Marion  
Franklin • Franklin CH • Franklin Pierce • Full Sail • Georgian Court  
Houston Baptist • Incarnate Word • Johnson CC • Juilliard  
Juniata • LA Monroe • Lander • Lasell • Lawrence Tech • Lesley  
Lincoln MO • Lincoln PA • Marietta • Maryland Art • Maryland Eastern  
Marywood • McKendree • Mesa State • Mills College • Monroe  
Mount Ida • Muskingum • N.E. Illinois • Nebraska Kearney  
New College FL • NJ City • Oakwood • Oglethorpe • Ohio Dominican

Youtube  
Facebook  
Wikipedia

2010s

# Responsive Web Design (RWD)



**Q: What is the most popular website in the world?**



*Billions of visitors*

Runners-up:  
YouTube  
Facebook  
Baidu

Alright, now for the important stuff.  
What happens behind the scenes  
when we look stuff up online?



The web is a bar.

A website is a beer.  
You order a beer.





The server brings your beer.  
You enjoy the contents.

Well, maybe it's a *little* more  
complex than that...



**Domain Name Server  
(DNS)** is like the menu.



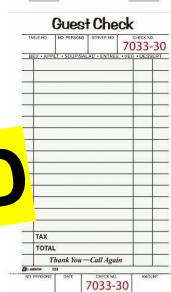
The ordering pad is like **Hypertext Transfer Protocol (HTTP)** - an agreement between the internet and your browser.



The **Browser** and the **Web Server** act as your waiter/waitress and the kitchen.



**THE WEB PAGE  
YOU'VE REQUESTED**



The ordering pad is like **Hypertext Transfer Protocol (HTTP)** - an agreement between the internet and your browser.

The **Browser** and the **Web Server** act as your server and the kitchen.



**THE WEB PAGE  
YOU'VE REQUESTED**



**YOUR BROWSER  
AND THE WEB  
SERVER**

The ordering pad is like **Hypertext Transfer Protocol (HTTP)** - an agreement between the internet and your browser.

Browser and Web Server act as your server and the kitchen.



**THE URL OF THE  
WEBSITE YOU  
REQUESTED**



**YOUR BROWSER  
AND THE WEB  
SERVER**



The ordering pad is like **Hypertext Transfer Protocol (HTTP)** - an agreement between the internet and your browser.

Browser and Web Server act as your server and the kitchen.



**THE URL OF THE  
WEBSITE YOU  
REQUESTED**



**THE WEB PAGE  
YOU'VE REQUESTED**



**THE RULES**

pad is like Hypertext Transfer Protocol (HTTP) - an agreement between the internet and your browser.



**YOUR BROWSER  
AND THE WEB  
SERVER**

Browser and Web Server act as your server and the kitchen.

# HTTP (“the rules”)

The **protocol** (rules, manners) used to pass HTML around. It's the rules used by computers to pass each other information. It makes it so a Windows machine can talk to a Mac can talk to a Linux box.

HTTP = *HyperText Transfer Protocol* = **http://www...**



*This is like your server writing down “#42 with cheese.” It’s somewhat cryptic for you, but the kitchen knows what that means.*

# IP Address

But computers really like numbers and are able to process them much more quickly than they can letters and human language.

**17.151.0.151 = apple.com**

The **Domain Name Server**, then, is like a big address book. It keeps track of what numbers (physical address) go with what names (URL).

URI / URL = *Uniform Resource Identifier / Locator*

**http://www.apple.com**



Wait, what is Apple's IP address?



# DNS (“the brand name”)

DNS = *Domain Name Server*

This translates the IP address into an easy-recognizable URL for human use.

You don't just want a webpage, you want a specific webpage. You don't just want to order a beer from the menu, you want to order a specific beer and you call it by name.



# The Request / Response Cycle

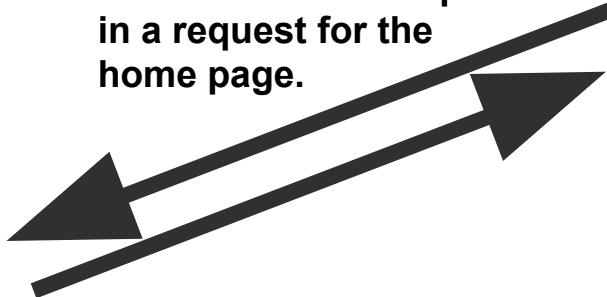
## STEP 3

**Apple's Web Server** looks through folders in its website and finds the content requested, and returns it as HTML (if it is not already).



## STEP 2

Your computer finds Apple's website using the IP address and puts in a request for the home page.



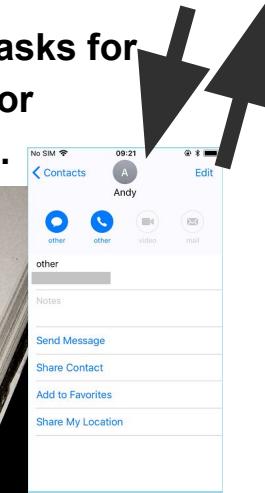
Your computer in Indiana



## STEP 1

Your computer asks for the IP address for [www.apple.com](http://www.apple.com).

CARTIN	CASS	45
425-4633	Robt L 32 Scott Cir Ded.	326-2370
329-0817	Robt & Lauren 6 015 Av Ded.	326-0635
337-1883	Robt W 21 Herbert Rd Bra.	848-5137
471-1883	Rose 617 Broad Way.	331-6948
749-1098	Ruth B 208 Atlantic Av Hdl.	925-2525
565-2725	Sean 141 Carroll Av Wswd.	329-9412
28-4212	Stacia 30 Chapman Wswd.	331-3652
8-2772	Stephen & Katherine 590 Nodine Way.	340-6655
5228	Stephen R 77 Draper Can.	828-1108
4999	Theresa 17 Brancile Ln Qu.	679-4923
028	Thos 65 Dickens Qu.	328-6078
13	Thos A Jr 194 School Wswd.	326-2474
3	Thos A Jr 194 School Wswd.	326-1140
13	Thos R 20 Winchester Dr Wswd.	698-4662
3	Timothy P 30 French Qu.	328-3922
1	Timothy P 63 Pleasant Mill.	331-0734
1	V For J 17 Autumn Cr Hm.	740
1	Walter J 17 Autumn Cr Hm.	
1	Wm C 212 Central Av Humrck.	
1	Wm C 36 Bayley Wswd.	
1	Zen & Bill 11 Kipton.	
1	Zen 68 Atlantic.	



# Common HTTP Status Codes

## **200 OK**

Standard response for successful HTTP requests. The actual response will depend on the request method used. In a GET request, the response will contain an entity corresponding to the requested resource. In a POST request, the response will contain an entity describing or containing the result of the action.

## **404 Not Found**

The requested resource could not be found but may be available in the future. Subsequent requests by the client are permissible.

## **403 Forbidden**

The request was valid, but the server is refusing action. The user might not have the necessary permissions for a resource, or may need an account of some sort.

[https://en.wikipedia.org/wiki/List\\_of\\_HTTP\\_status\\_codes](https://en.wikipedia.org/wiki/List_of_HTTP_status_codes)

Now let's think of the website information sent from the server as *ingredients for a hamburger*, and the browser as the *chef* that puts it together and presents your *burger* (website) on a plate (in your browser window).



HTML, CSS, images, etc.. sent from the server = **ingredients**

Web Browser = **chef**

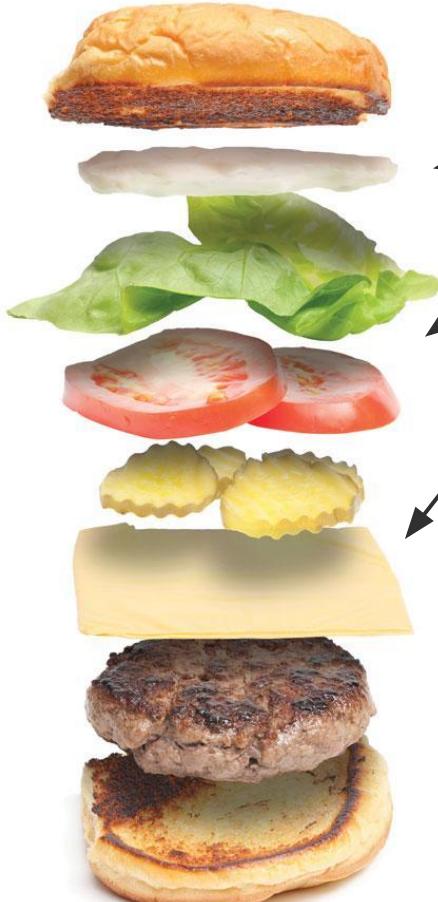
Website you view in the browser = **your hamburger**





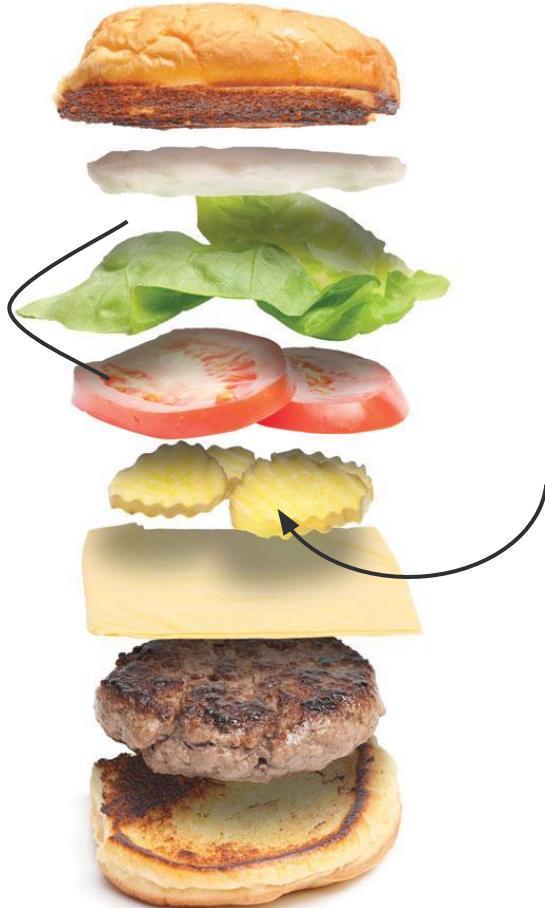
**HTML** is like the *bun*. It provides structure. It holds all the other pieces together.

HTML contains and structures (but DOES NOT position) content.  
***The content is the meat. Obviously.***



**CSS** (Cascading Style Sheets) is what makes a web page pretty, special and *stylish*.

CSS also controls the **positioning** and **layout** of elements in a web page.



**Javascript** allows elements to be manipulated even once they've been served.

*(It's like peeling off the pickles and squirting on some ketchup and mustard -- changes AFTER it's served.)*

Slideshows, button rollovers and other **interactive features** are often done with JS.



**Different browsers are kind of like different chefs.**

Given the same exact ingredients, the burger will still look and taste a little different depending on who prepares all the parts.



# Opera Safari

A photograph of a smiling man in a white chef's coat standing next to a large fire. The word "Firefox" is overlaid in yellow text.

# Firefox

# Chrome



# Internet Explorer



**What are we?**

**BROWSERS!**

**BROWSERS! BROWSERS!**



**What do we want?**

**MORE SPEED!**

**MORE SPEED!**

**MORE SPEED!**



**And when do we want it?**

**RIGHT NOW!!!**

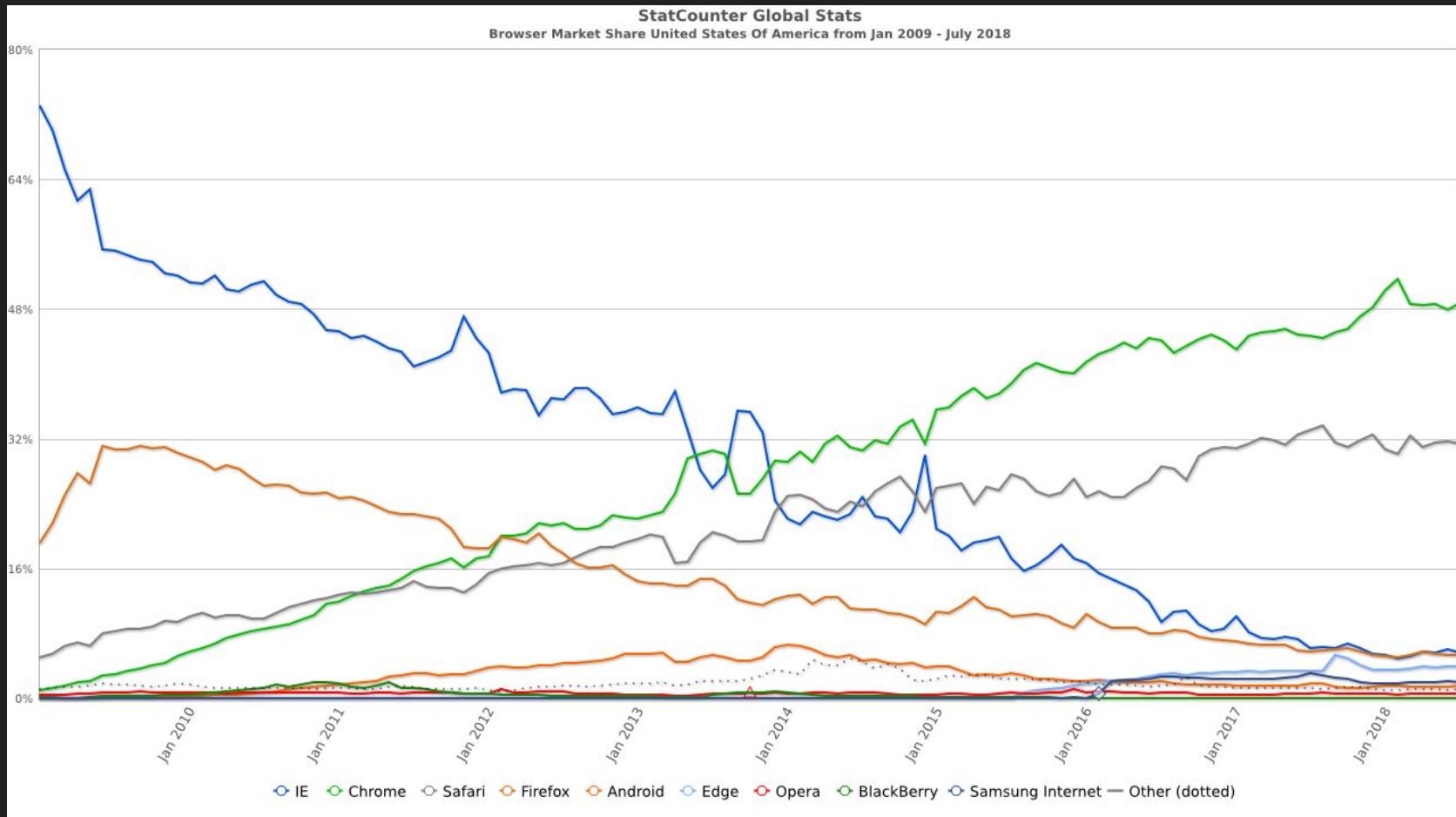
**RIGHT NOW!!!**

**RIGHT NOW!!!**



**BROWSERS!**

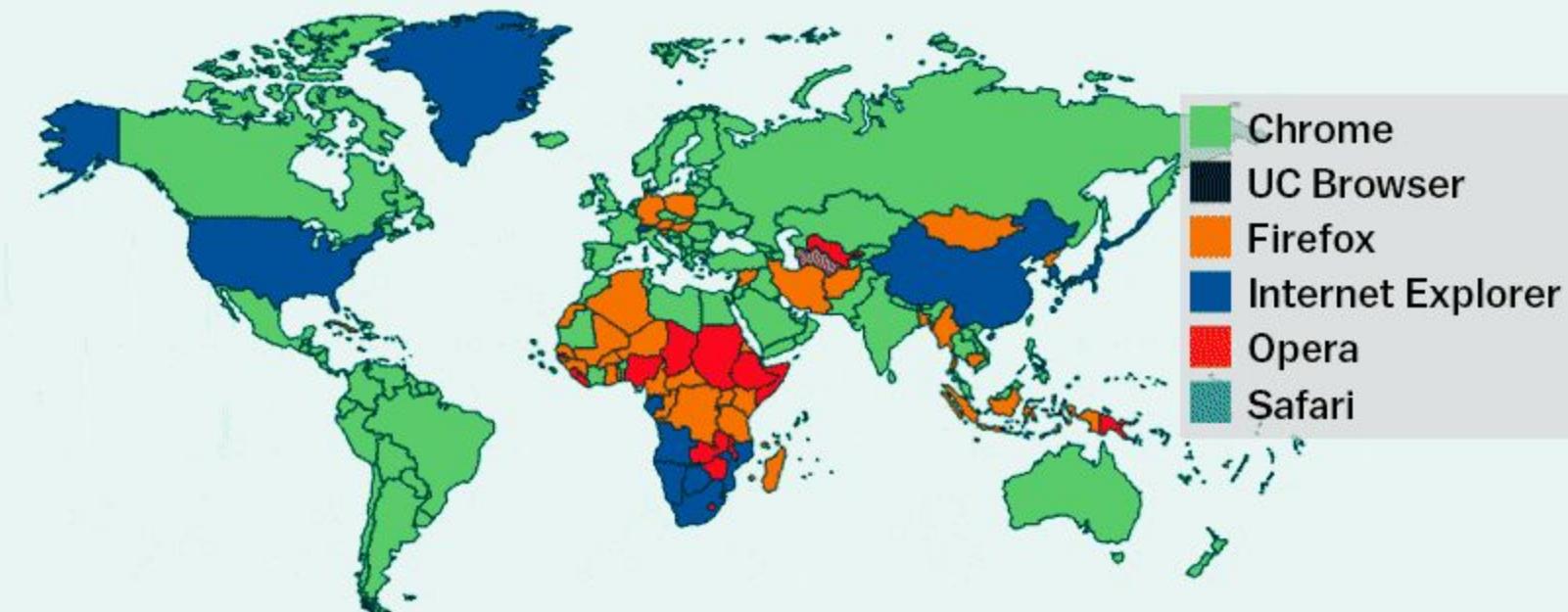




Current Statistics: <http://gs.statcounter.com/browser-market-share/all/united-states-of-america>

# Most popular web browsers, May 2013

Source: StatCounter



V

[https://cdn3.vox-cdn.com/assets/4537361/browsershare\\_v3.gif](https://cdn3.vox-cdn.com/assets/4537361/browsershare_v3.gif)

This is why we need  
**web standards**, people.

*Q: Who sets the web standards?*

World Wide Web Consortium  
<https://www.w3.org/>