ZHdK, 2019, Web Development, Jonas Scheiwiller

Web Technologies
Course Intro

Image: Simon Stalenhag, https://simonstalenhag.se/bilderbig/I_int04_big.jpg

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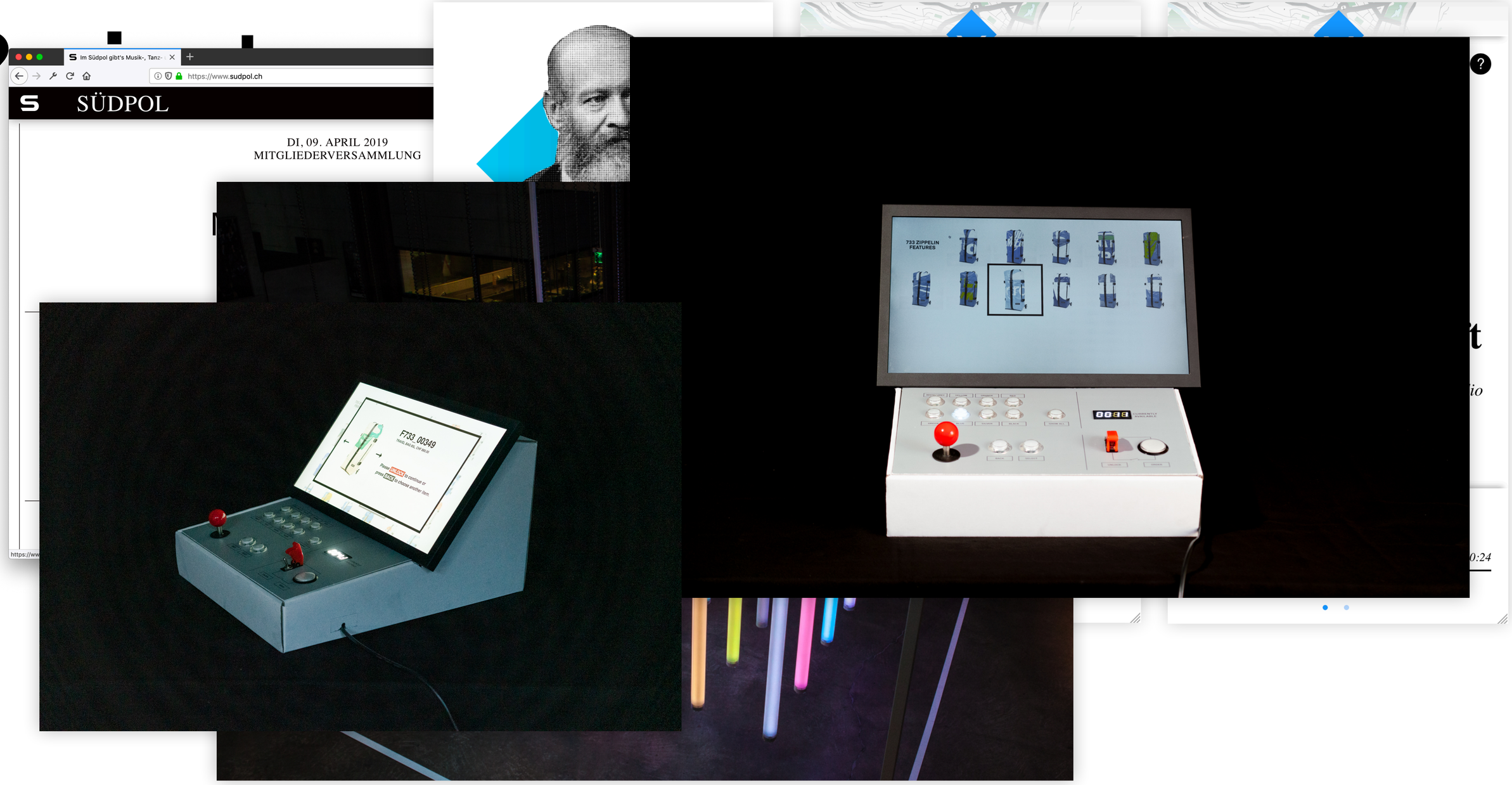
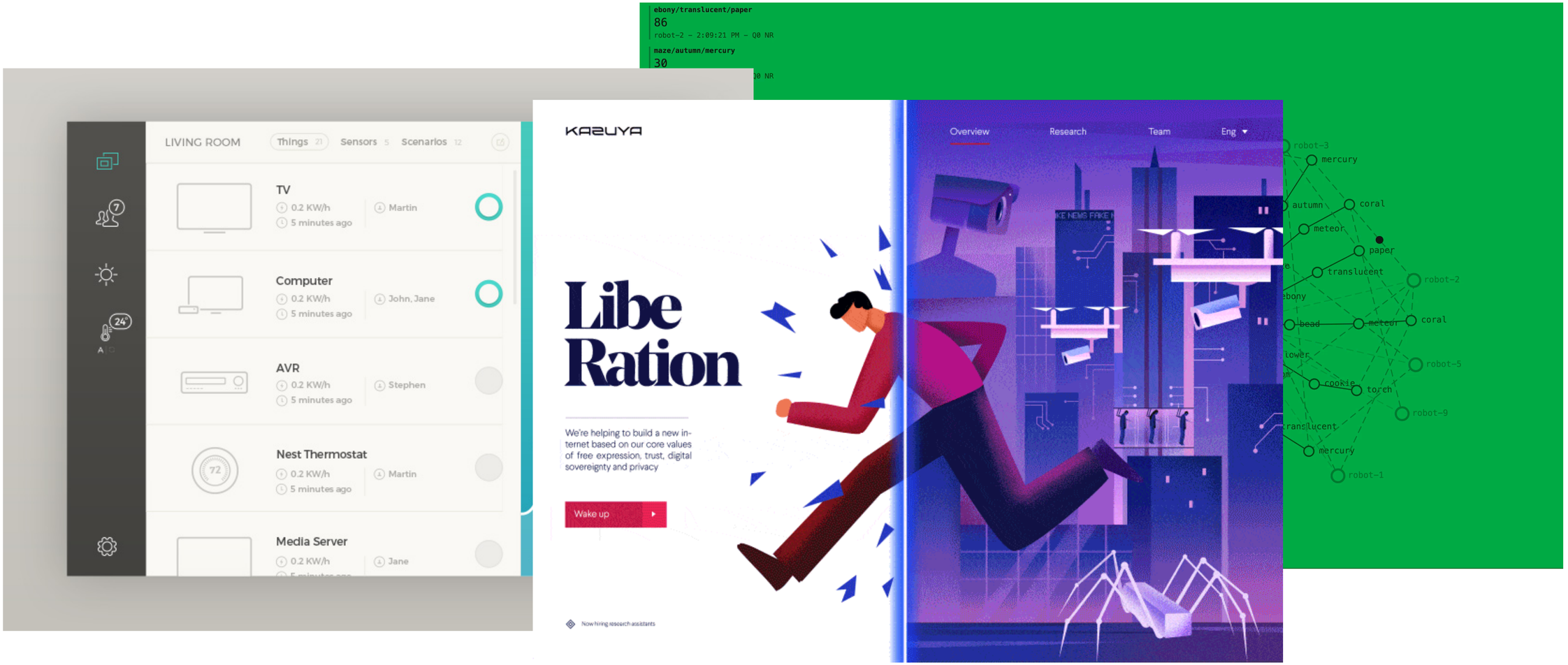


Web Technologies — why?



Course Syllabus — Dates

- Fr 12.04 (Morgen)
- Fr 03.05 (Morgen)

- Di 07.05
- Do 16.05
- Do 23.05
- Fr 31.05

Course Syllabus — Deliverables & Grades

- 80% of time present
- 25% of overall grade
- 2 Exercises (graded)
  - Individual work (no groups!)
  - Product Description
  - «Shopping Cart»

Exercise: Product Description

- Basic structure, HTML tags
- Basic styling, positioning
- Responsive Layout
- (Description on wiki)

Sony Alpha a7S II Body (E-Mount)

1 | select rental period »

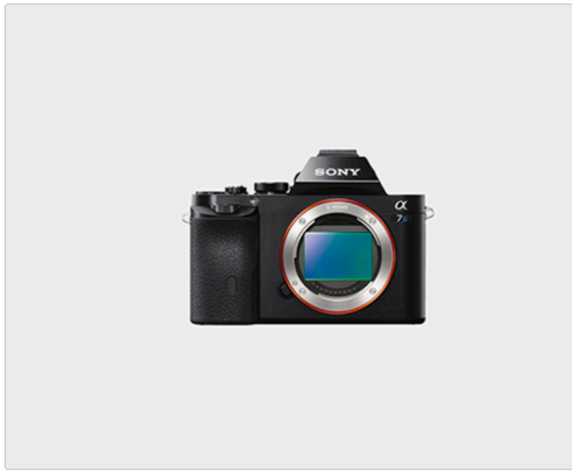
Add to Cart »

Atlanta, GA	Dallas, TX	Washington, DC
In Stock Now	In Stock Now	In Stock Now

In Stock For Shipping

The a7S II Mirrorless Digital Camera from Sony offers an impressive blend of sensitivity, dynamic range, resolution, and speed to benefit a versatile multimedia workflow. Revolving around a full-frame 12.2MP Exmor CMOS sensor, the a7S II is capable of internal UHD 4K recording at 30 fps with full pixel readout as well as 1080p recording at up to 120 fps, all in the XAVC S format. For both stills and video recording, the BIONZ X image processor also pairs with the sensor to enable expanded sensitivity to ISO 409600, continuous shooting to 5 fps, and fast intelligent autofocus with low-light sensitivity to -4 EV. Further enabling working in difficult lighting conditions, 5-axis SteadyShot INSIDE image stabilization compensates for vertical, horizontal, pitch, yaw, and roll camera movements for sharper, smoother handheld recording.

Complementing the 4K recording capabilities is a redeveloped recording setup, including the ability to utilize S-Log3 Gamma and S-Gamut3 in addition to S-Log2, for increasing dynamic range values by up to 1300% to better match high-end post-production workflows. For clearer monitoring potential, an enhanced Zebra function better supports working with S-Log gamma settings and a Gamma Display Assist helps to preview imagery with



- **Max Resolution:**12MP: 4240 x 2832
- **Sensor Type:** CMOS, 35.8 x 23.9 mm
- **Video Recording:**Yes, NTSC. 3840 x 2160: 30 fps, 24 fps, fps. 1920 x 1080: 120 fps, 100 fps 1920 x 1080: 60 fps, 50 30 fps, 25 fps, 24 fps
- **Memory Card Type:** SD, SDHC, SDXC, Memory Stick PRO (High Speed), Memory Stick PRO HG-Duo, Memory Stick X HG Duo

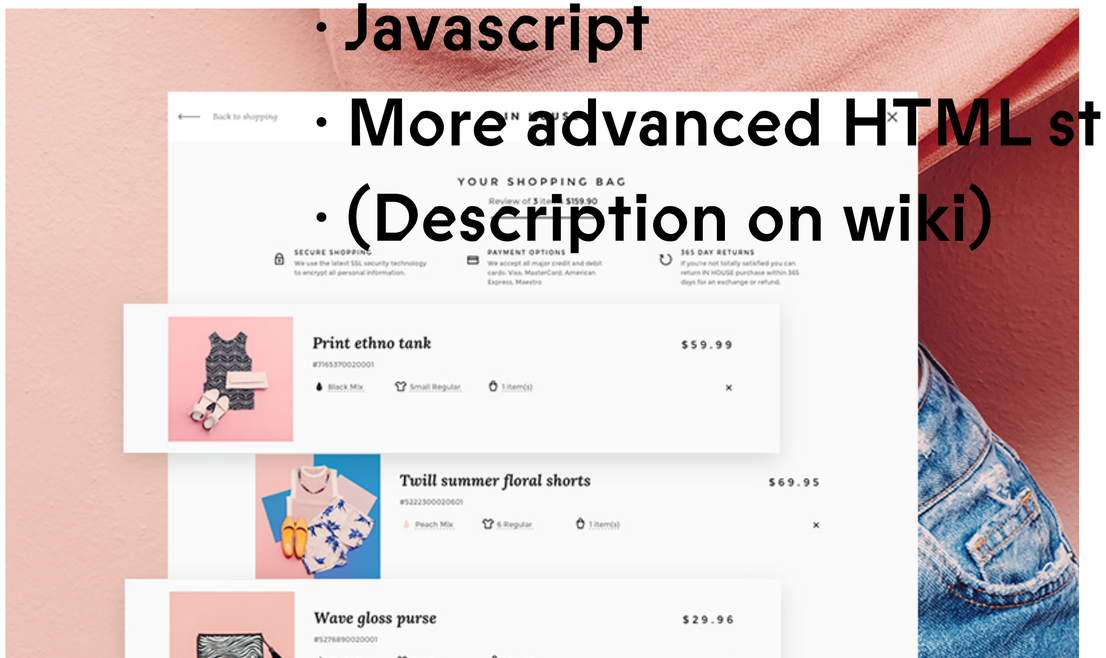
Documents

- Instruction Manual

Exercise: «Shopping Cart»

- 🚧 Still unclear:

- Interactions (Add/Remove items)
- Javascript
- More advanced HTML structure
- (Description on wiki)



SHOPPING CART

PYZEL RADIUS SURFBOARD

Size: 6'2

$695.00

— 1 +

PYZEL SHADOW SURFBOARD

Size: 5'8

$695.00

— 1 +

What do you already know?

What do you expect?

Resources/Knowledge:
http://wiki.iad.zhdk.ch/CP

Course Information (Basic GUI):
http://wiki.iad.zhdk.ch/BGUI/598999049/Basic+GUI+2019

Course Information (Web Dev)
http://wiki.iad.zhdk.ch/BA2/612663325/

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History of internet and the world wide web

Image: Simon Stalenhag, https://simonstalenhag.se/bilderbig//december1994_1920.jpg

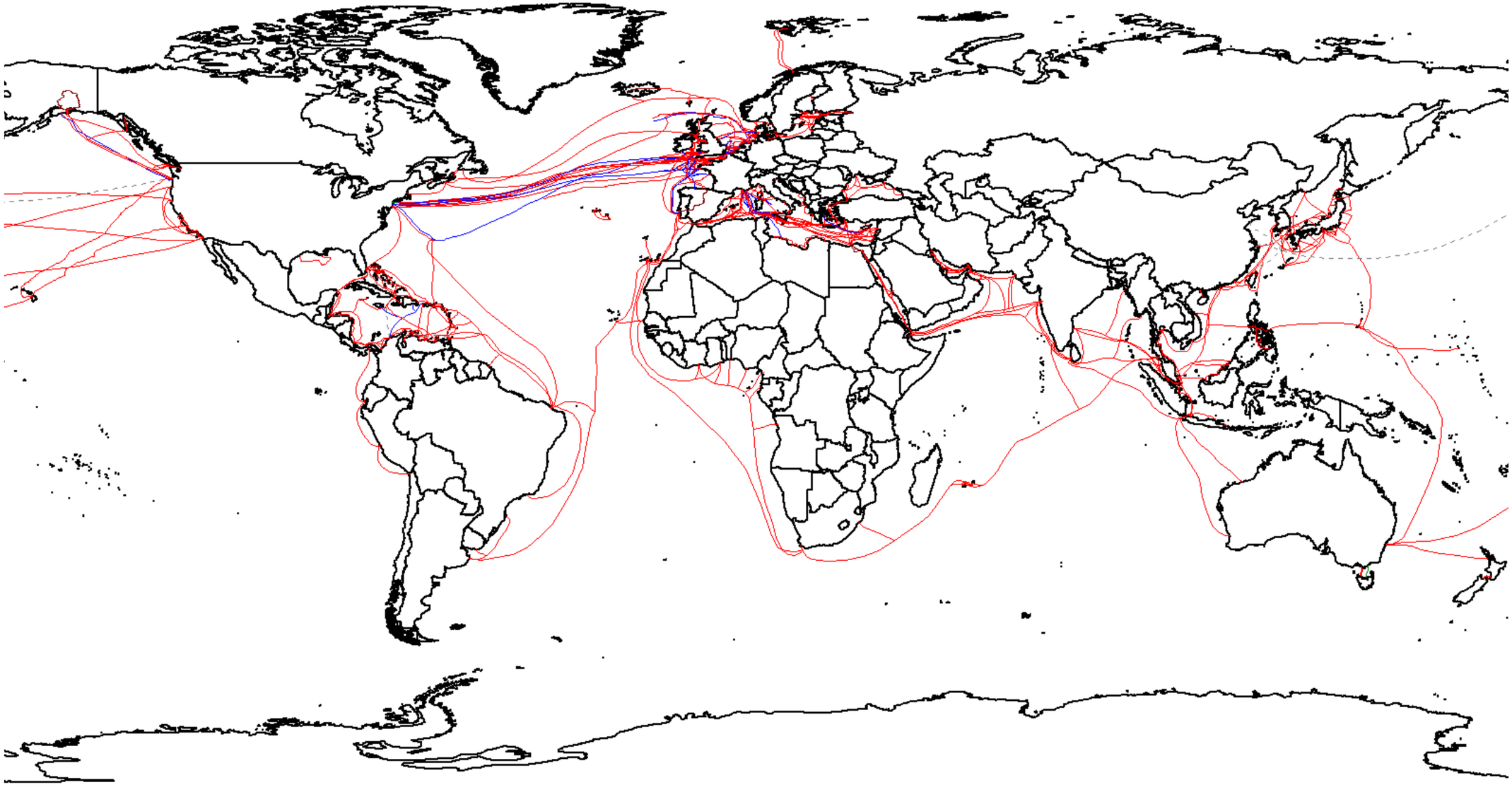
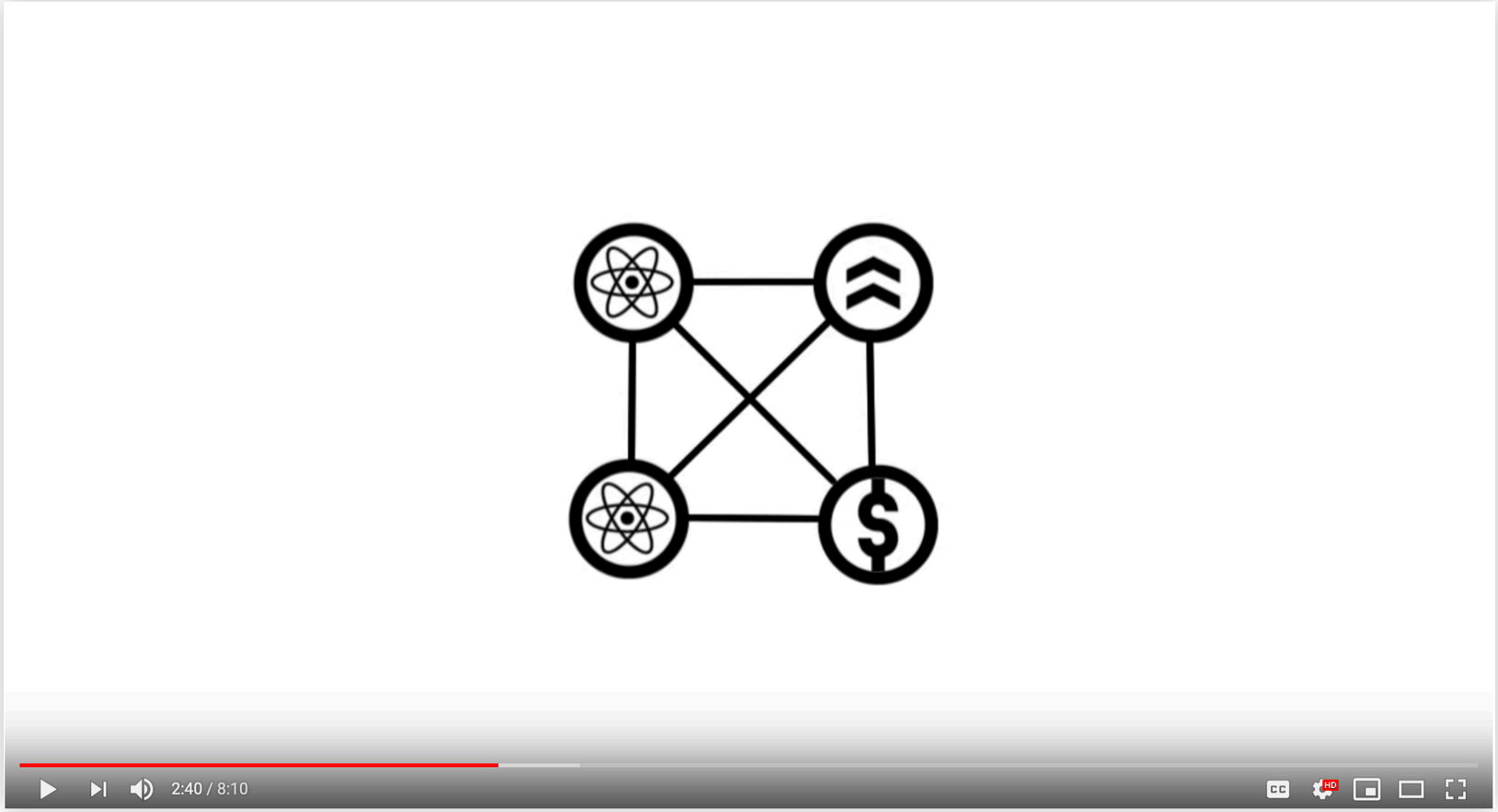
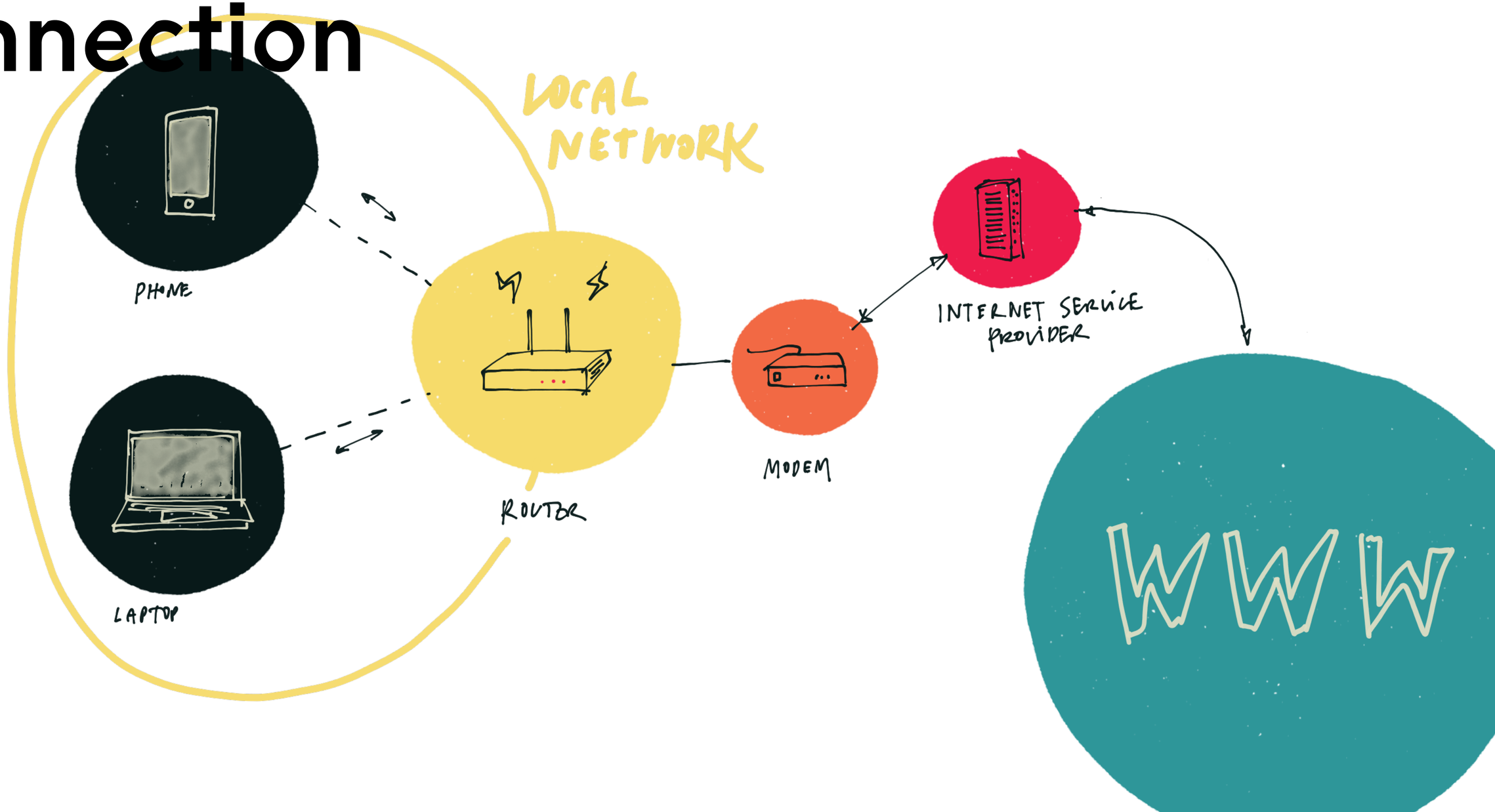


Image: https://upload.wikimedia.org/wikipedia/commons/7/7d/World_map_of_submarine_cables.png



Video: https://www.youtube.com/watch?v=7NpczzIsnLU

Connection


LOCAL NETWORK
PHONE
LAPTOP
ROUTER
MODEM
INTERNET SERVICE PROVIDER
WWW

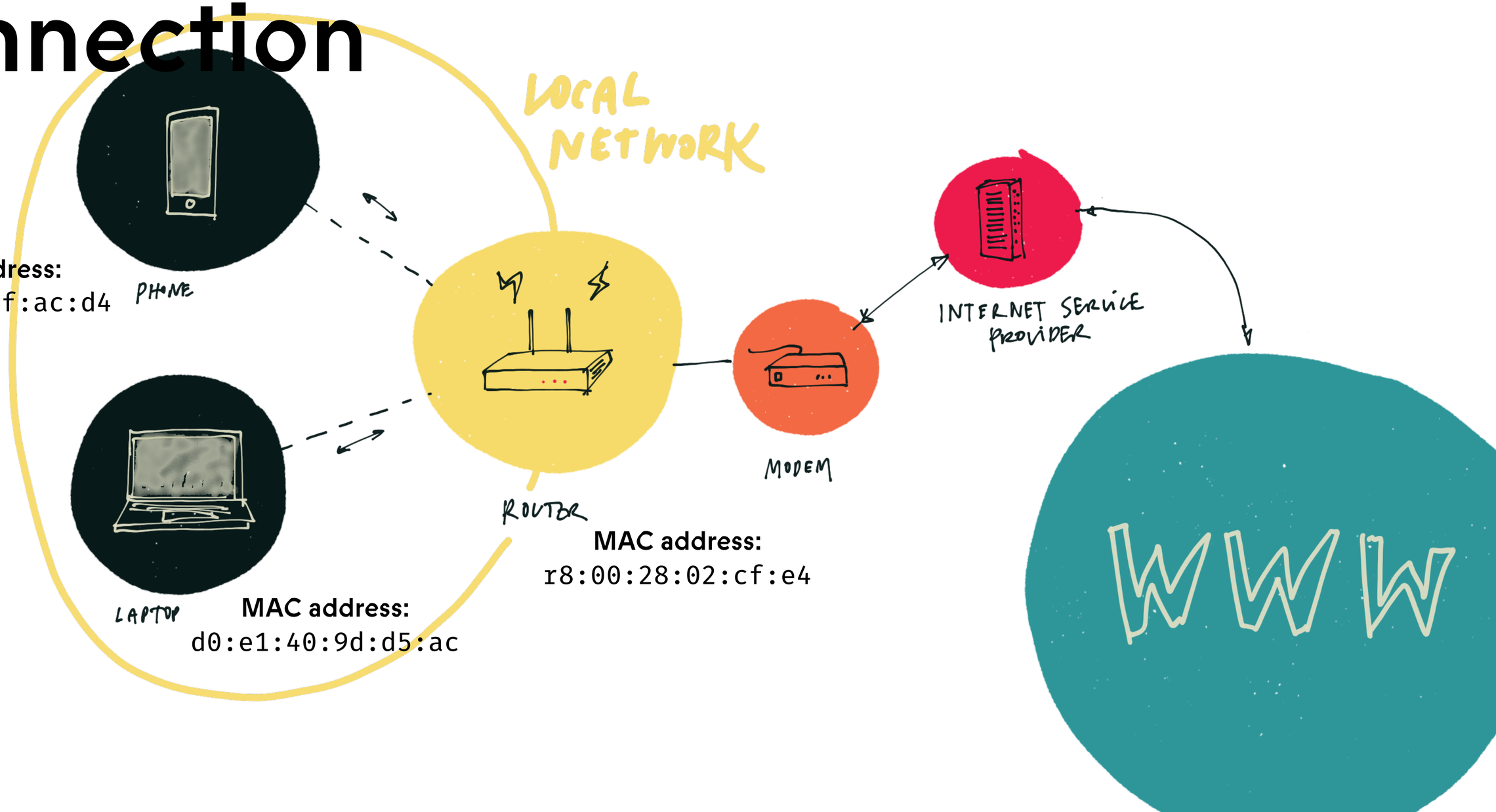
Protocols

- Set of rules that governs communication between two computers in a network.
- Different layers:
  - Data-Link – Protocols: e.g. Ethernet Protocol
  - Internet Protocols: e.g. IP4, IP6
  - Transport Protocols: e.g. TCP
  - Application Protocols: e.g. Email

MAC addresses

- Every device that connects to a network has a MAC-address `d0:e1:40:9d:d5:ac`
- Used to identify a device in a local network.

Connection


LOCAL NETWORK
MAC address:
9c:35:5b:5f:ac:d4
PHONE
LAPTOP
MAC address:
d0:e1:40:9d:d5:ac
ROUTER
MAC address:
r8:00:28:02:cf:e4
MODEM
INTERNET SERVICE PROVIDER
WWW

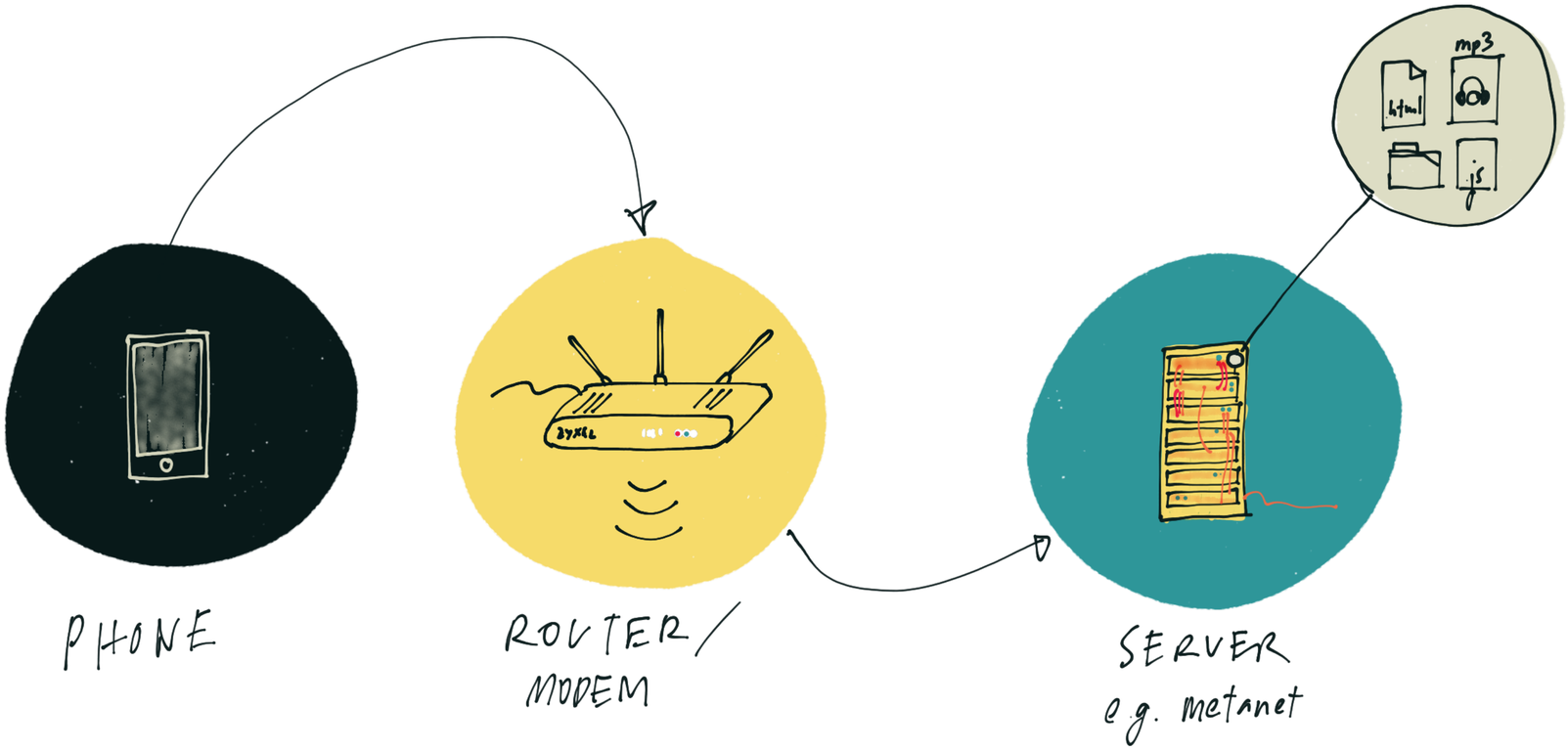
Protocols: IP4/IP6

- **Every computer has an IP4 adress:**
  `173.194.40.40`
- **Only 4'294'967'296 addresses world wide!**

- **> Soon every computer also has an IPv6 address:**
  `2001:0db8:0000:0042:0000:8a2e:0370:7334`
- **About 3.4×10^{38} addresses world wide.**

- **An IP address is used to identify a computer on the internet.**

Connection



IP address:
??

Public IP4 address:
194.193.248.111

Public IP4 address:
192.54.112.30

Reserved IP addresses

- Some address ranges are used for private networks:

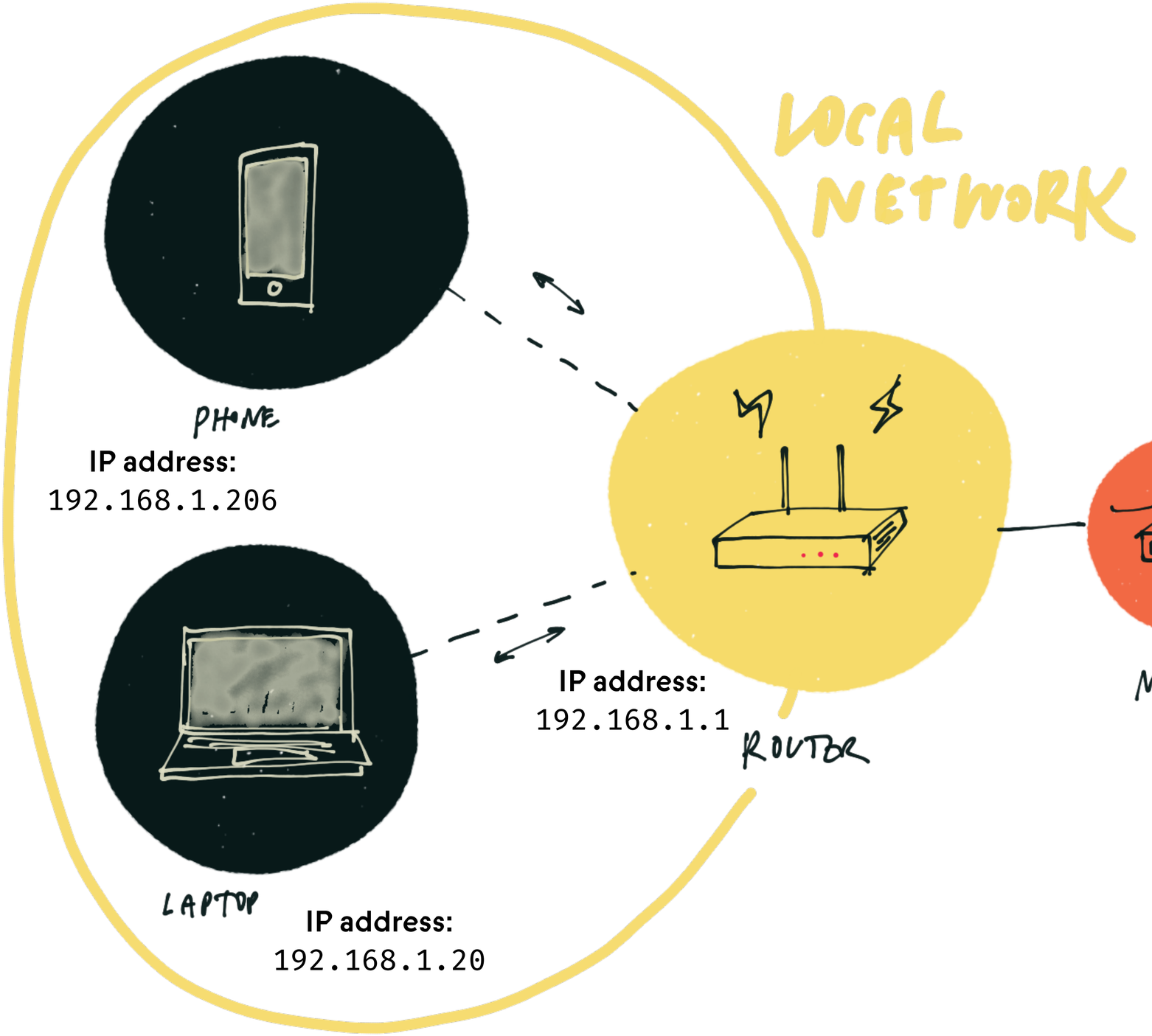
```
10.0.0.0          -    10.255.255.255
172.16.0.0        -    172.31.255.255
192.168.0.0       -    192.168.255.255
```

Image: https://xkcd.com/742/

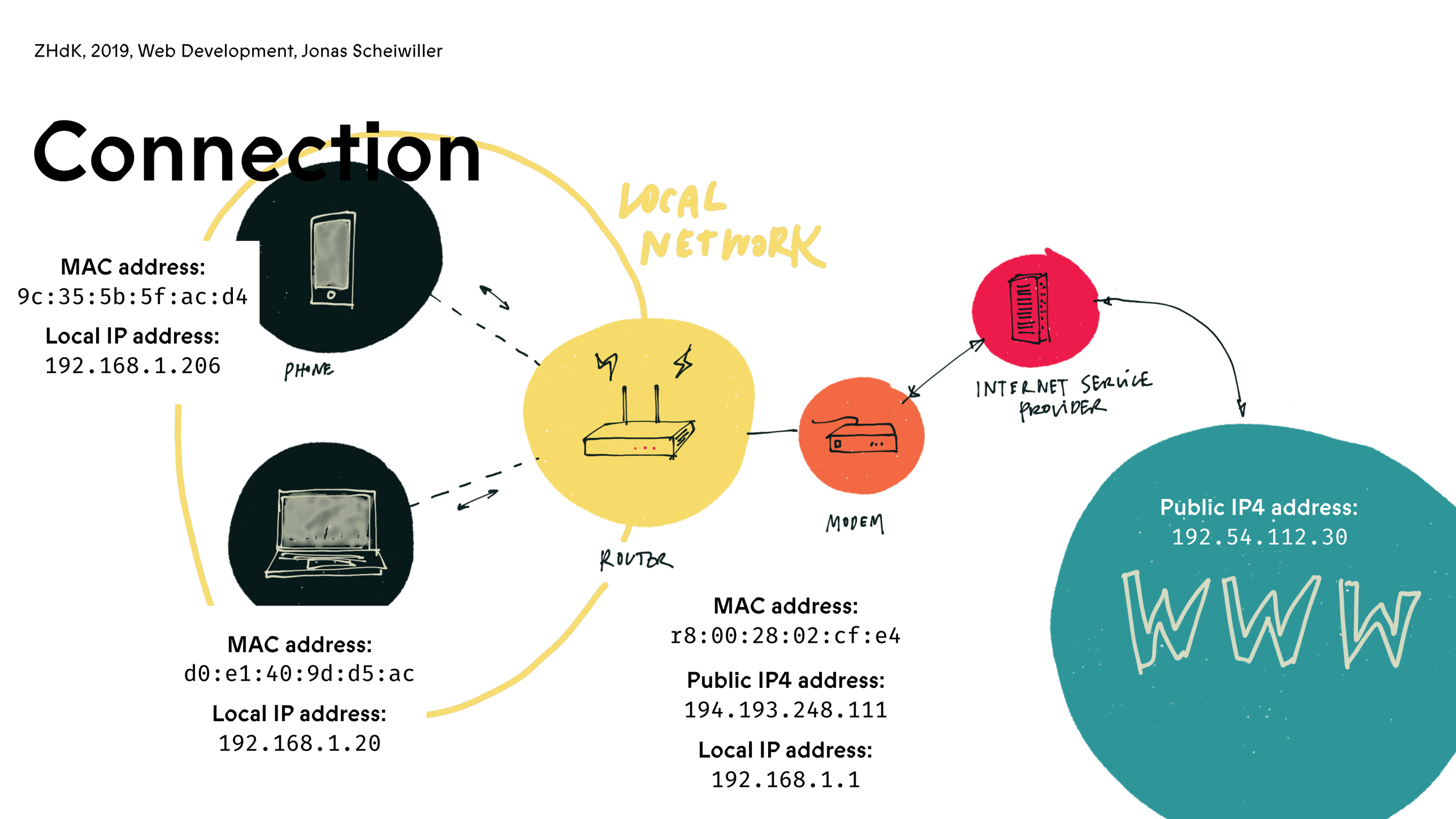
MAC addresses

- 281,474,976,710,656 possible MAC addresses
- Vendors are given a range of MAC Addresses that can be assigned to their products

Connection


LOCAL NETWORK
PHONE
IP address:
192.168.1.206
IP address:
192.168.1.1
ROUTER
LAPTOP
IP address:
192.168.1.20

Connection



MAC address:
`9c:35:5b:5f:ac:d4`

Local IP address:
`192.168.1.206`

MAC address:
`d0:e1:40:9d:d5:ac`

Local IP address:
`192.168.1.20`

MAC address:
`r8:00:28:02:cf:e4`

Public IP4 address:
`194.193.248.111`

Local IP address:
`192.168.1.1`

Public IP4 address:
`192.54.112.30`

Localhost

- Your computer has a local address

  `127.0.0.1 / localhost`

- When building a webpage, you often run a local server > http://localhost:3000

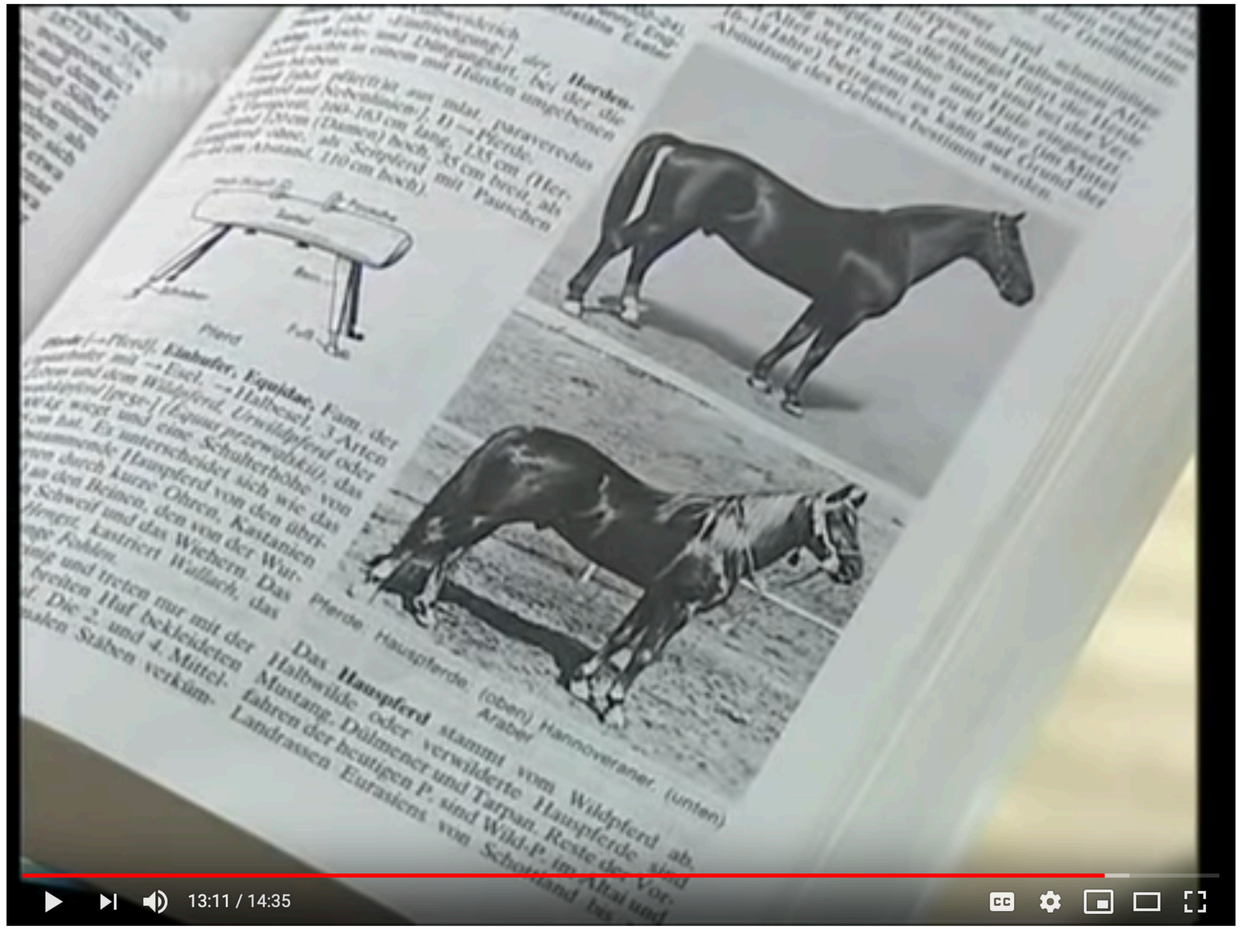
Image: http://frikilogia.com/wp-content/uploads/2012/06/Como-en-casa-en-ningun-sitio.-127.0.0.1.jpg

Protocols

- Transmission Control Protocol (TCP)
- Internet Protocol (IP)
  > TCP/IP
- Hypertext Transfer Protocol (HTTP) /
  Hypertext Transfer Protocol Secure (HTTPS) 🖥️

- FTP (File Transfer Protocol)
- Mail-Protocols (SMTP, POP3, IMAP) ✉️
- Secure Shell (SSH)

World Wide Web



Video: https://www.youtube.com/watch?v=j4cN_q3NX9c

http://line-mode.cern.ch/www/hypertext/WWW/TheProject.html

Image: https://cds.cern.ch/images/CERN-HOMEWEB-PHO-2019-004-1

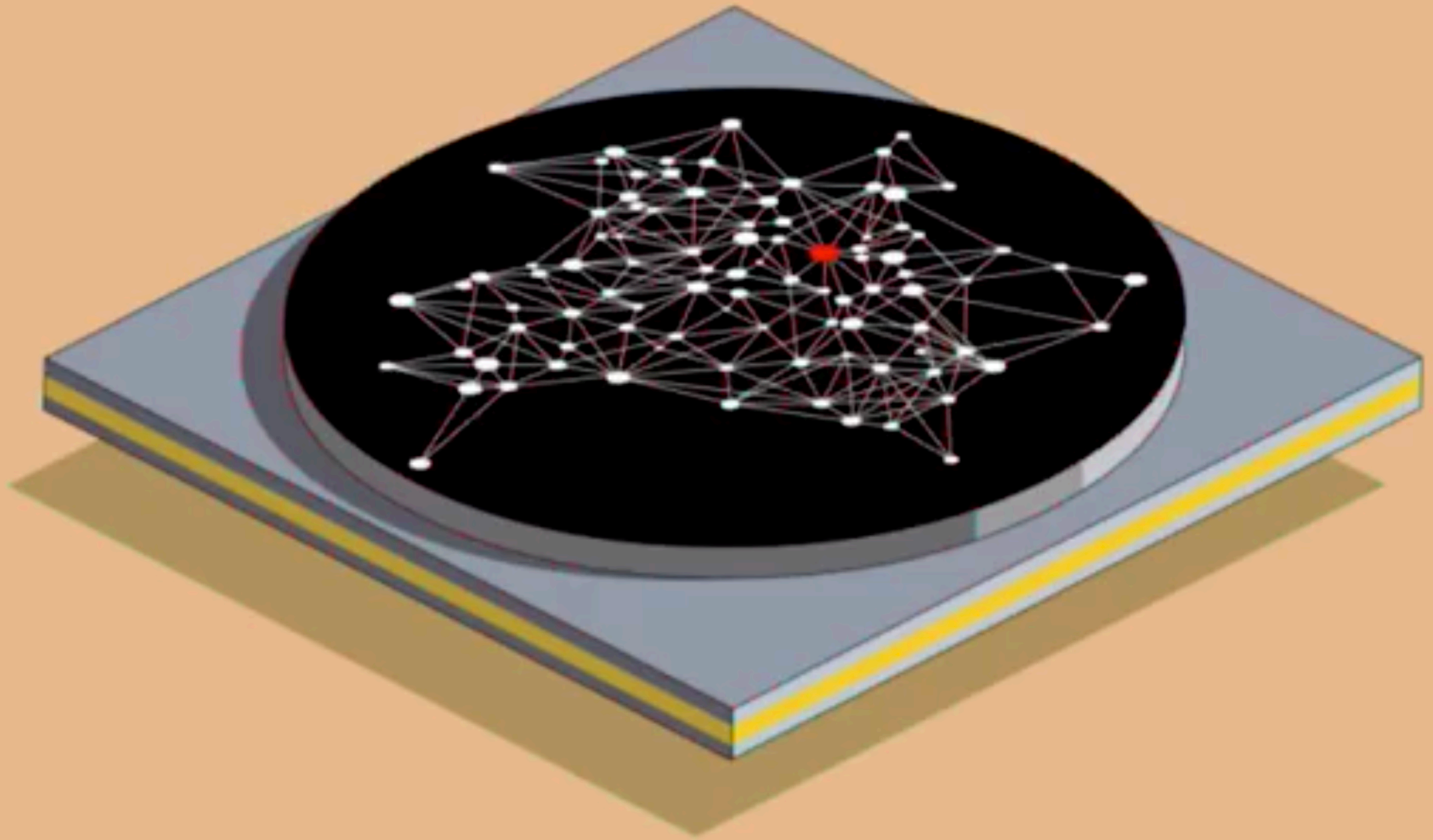
Domains

Image: Rune Fisker, https://agentpekka.com/artist/rune-fisker/the-wired-world-in-2018/

Domain Name System (DNS)

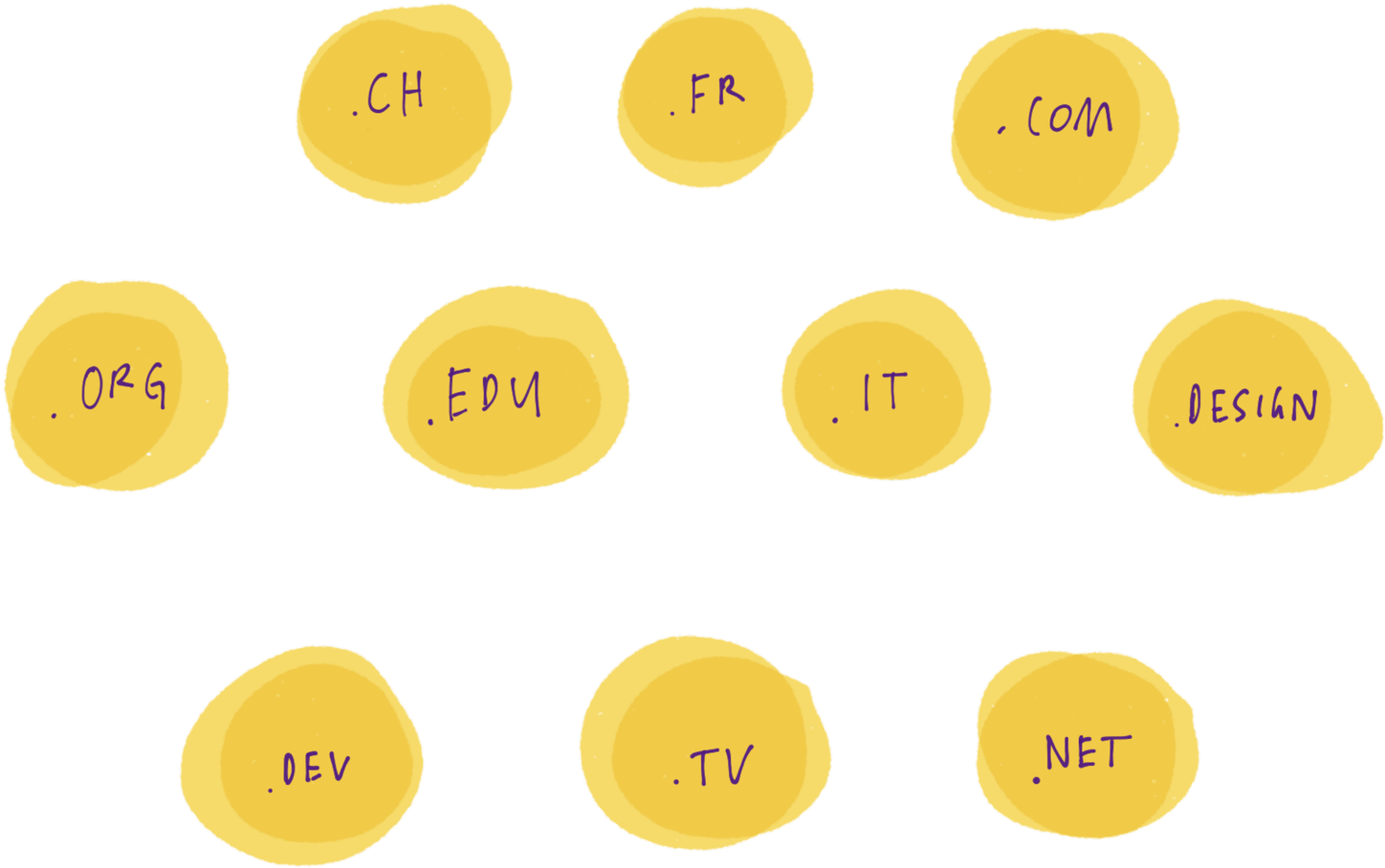
- **Translates IP addresses into memorizable names:**

```
google.com    >    173.194.40.40
localhost     >    127.0.0.1
```



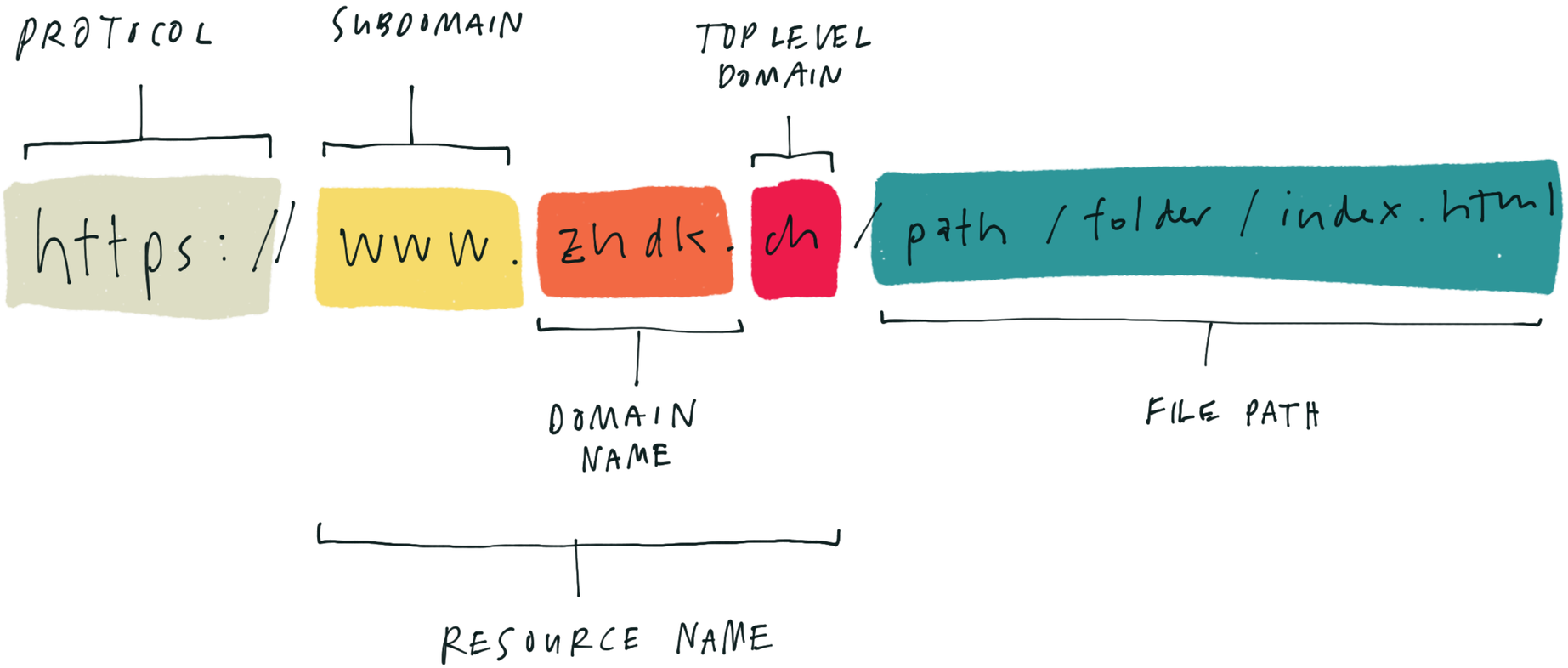
Video: https://www.youtube.com/watch?v=2ZUxoi7YNgs

Top-level Domains

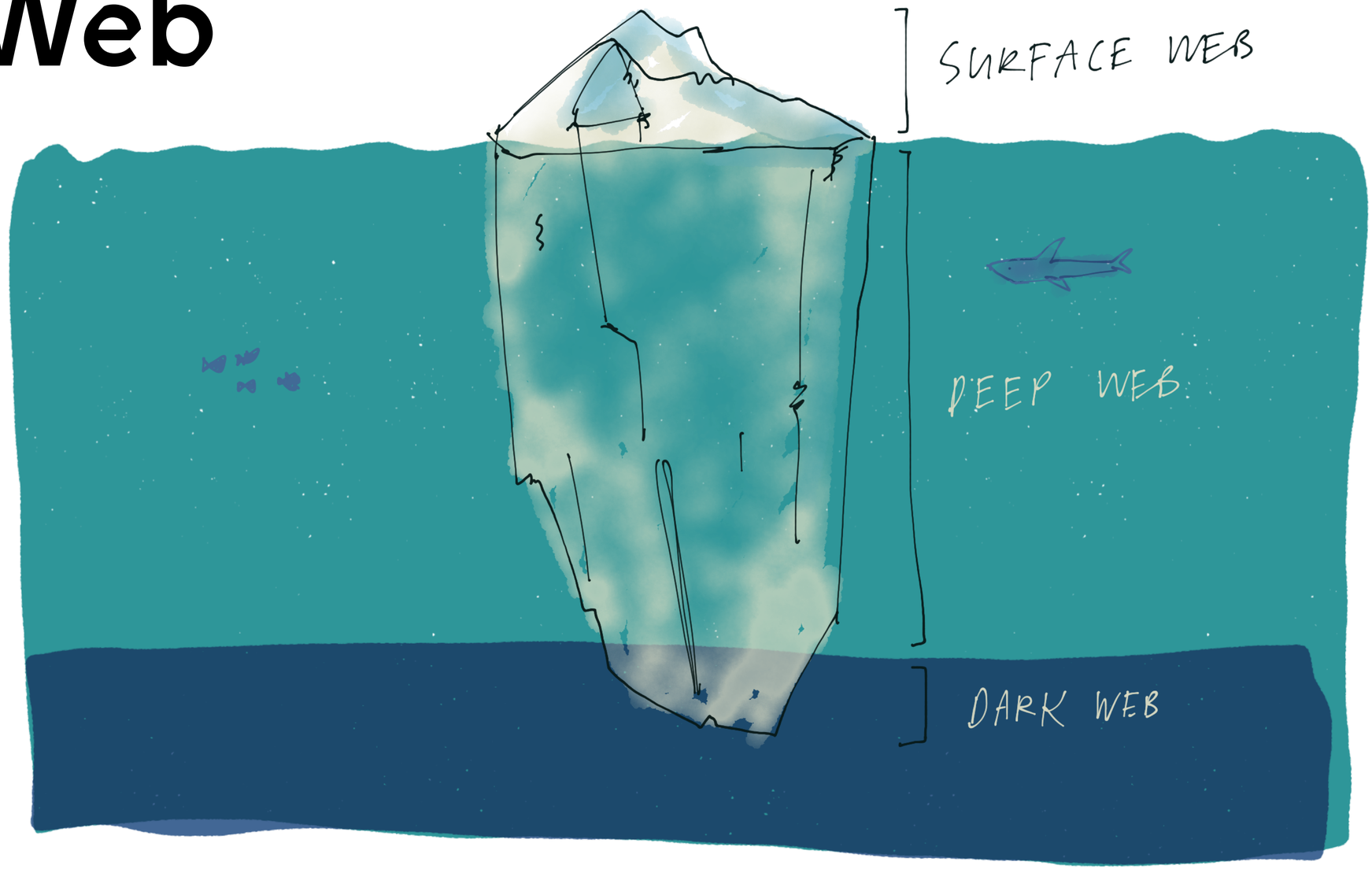


Uniform Resource Locator (URL)

Uniform Resource Locator (URL)



The Web



Web Technologies

- HTML 5
- CSS
- Javascript
- PHP
- Go
- Xml

HTML


```
<html>
  <head>
    <title>An Example Page</title>
  </head>
  <body>
    <h1>A Title</h1>
    <p>A Paragraph</p>
  </body>
</html>
```

Cascading Style Sheets (CSS)

```css
body {
  font-family: "Helvetica";
  font-size: 16px;
}

h1 {
  font-weight: bold;
  color: red;
}
```

JavaScript


```
1   var title = document.getElementById("title");
2
3   if (!easterEgg.wasFound) {
4     title.innerHTML = "Find every easter egg on this page!";
5   }
```

Homework

- Absolutely mandatory:
  Download & setup code editor (Atom)
  http://wiki.iad.zhdk.ch/CP/4456471/Code+Editors
- Feel free to browse
  http://wiki.iad.zhdk.ch/CP