

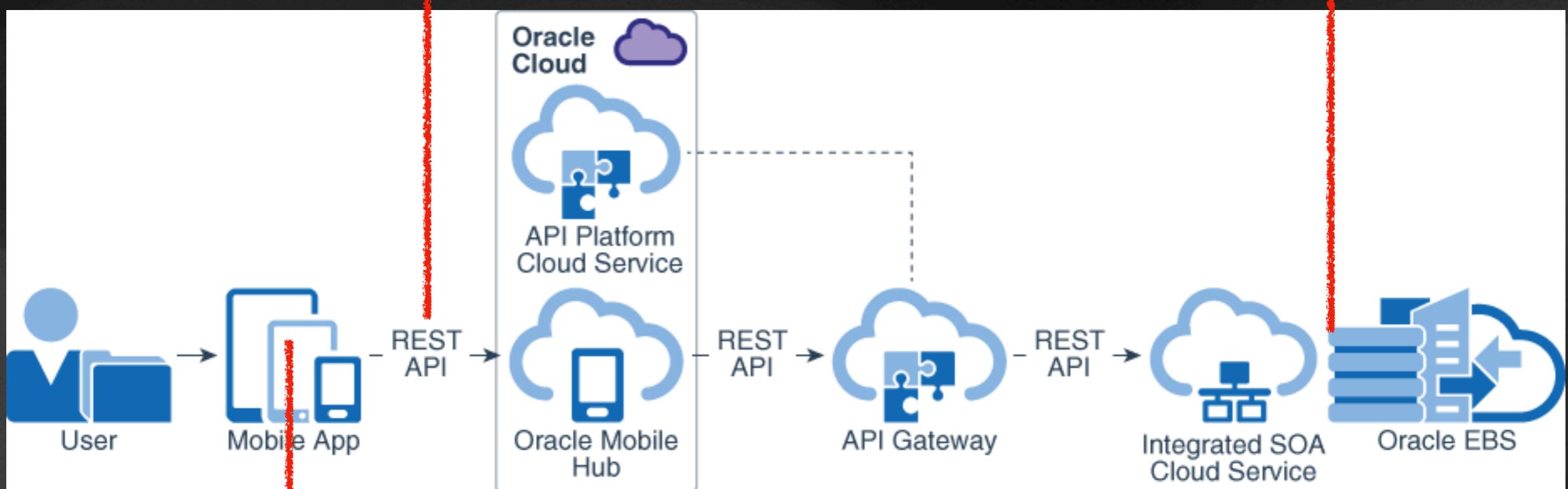
Web, Mobile, and Cloud

Introduction

Pat Ryser-Welch

Web technologies
supported by Internet
networking technologies

The cloud:
Mainframes, large
Computing facilities,
Virtualisation, containers,
Data storage, elasticity,

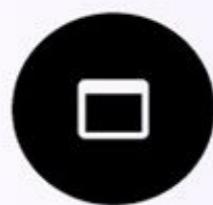


HTML, CSS, Javascript,
Native environment,
and Operating systems,
Browsers

Web foundations

distributed
centralised
transport
browsers
internet
application
solid-pods
networking-protocols
architecture
protocols
html
link
foundation
css
people
software
servers
api
standards
wc
networking
layer
web
services-oriented
data-protocols

WWW of past, present and future



Web 1.0

- _ Basic Web Pages
- _ Html
- _ Ecommerce
- _ Java & Javascript

1990 - 2005



Web 2.0

- _ Social Media
- _ User Generated Content
- _ Mobile Access
- _ High-quality Camera & Video
- _ Apps
- _ Corps Monetizing Your Data
- _ High-speed Communication
- _ Global Internet Access

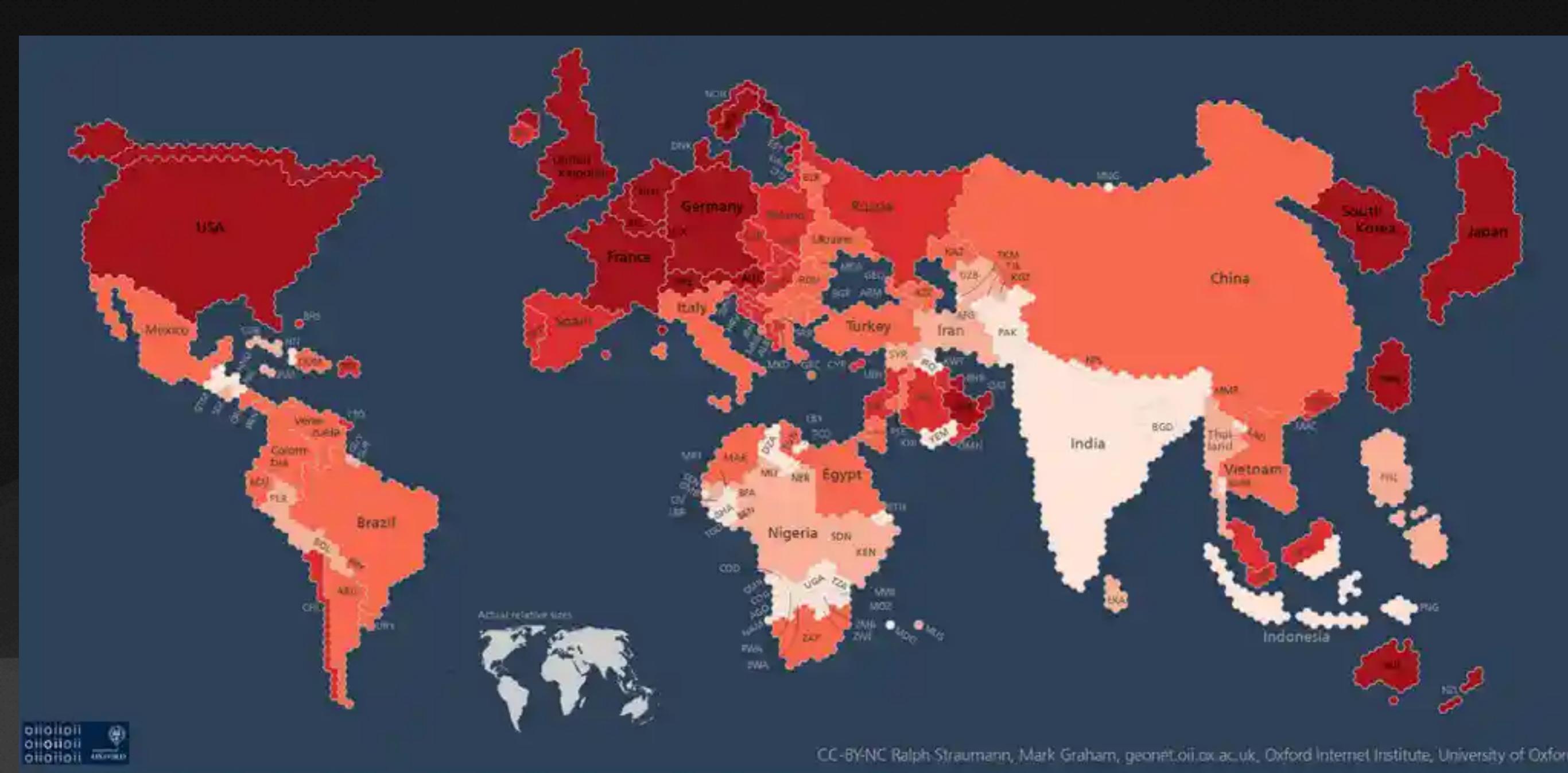
2006- PRESENT DAY



Web 3.0

- _ Semantic Web
- _ dApps
- _ Users Monetize Their Data
- _ NFTs
- _ VR & AR (Metaverse)
- _ Permissionless Blockchains
- _ Artificial Intelligence
- _ Interoperability

IMMINENT



The World Online

Percentage of people online



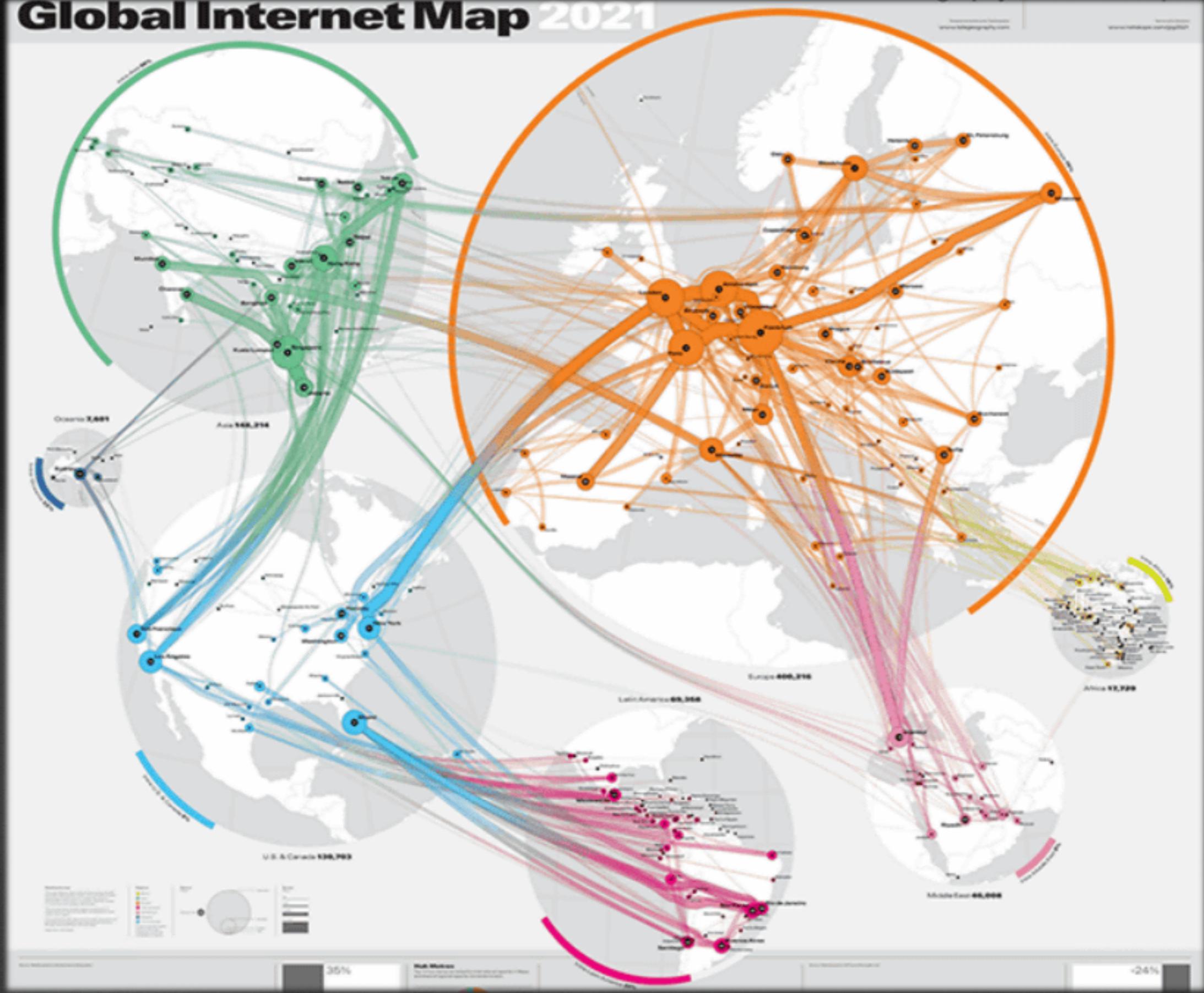
Number of people online

One dot represents roughly 470,000 people online.

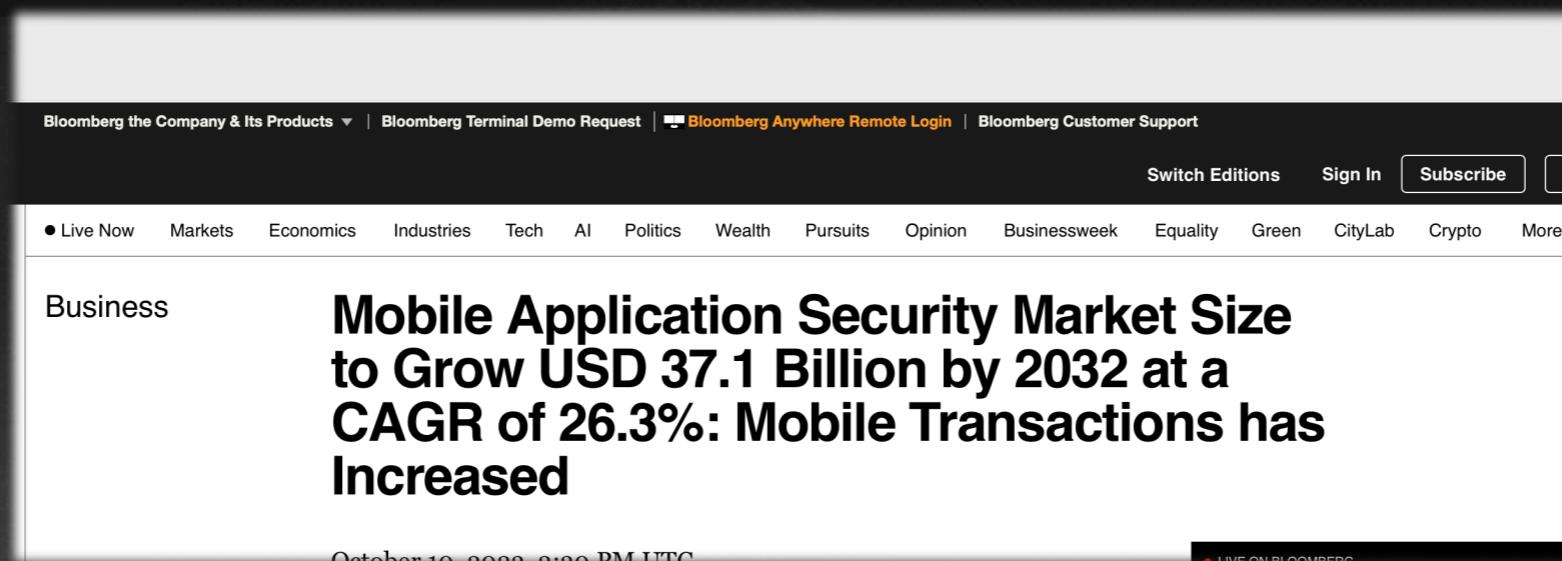
The countries are scaled proportionally to the number of Internet users in that country. Countries with fewer than 470,000 people online have been removed from the map. The shading indicates the percentage of the population that is online.

The visualization uses 2013 data from the World Bank's Worldwide Governance Indicators project and from Natural Earth.

Global Internet Map 2021



Mobile app - the market



Home > Blog > Inclusive App Development: How To Empower Differently-Abled Communities Through Accessibility

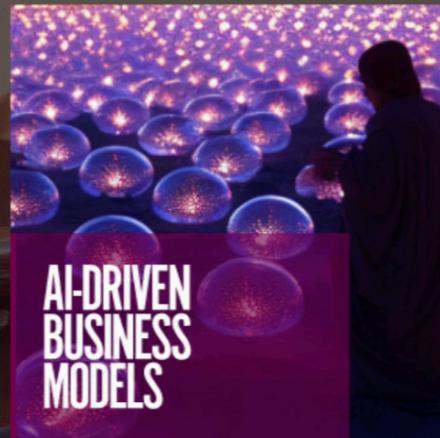
Inclusive App Development: How To Empower Differently-Abled Communities Through Accessibility

Updated on : October 14, 2023 | By : Erik Watson

INFO~TECH
RESEARCH GROUP

TECH TRENDS 2024

SEIZE OPPORTUNITIES



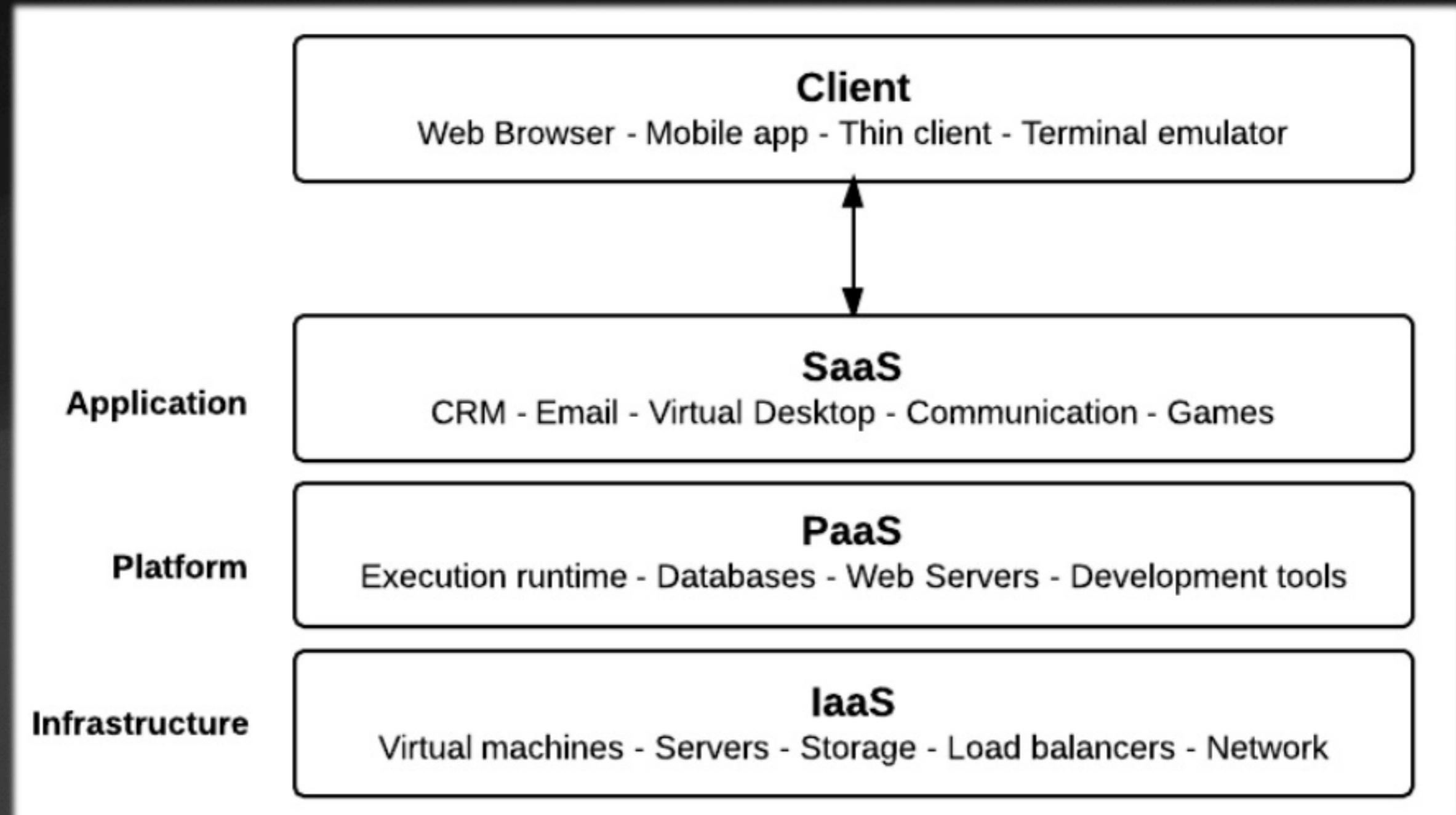
MITIGATE RISKS

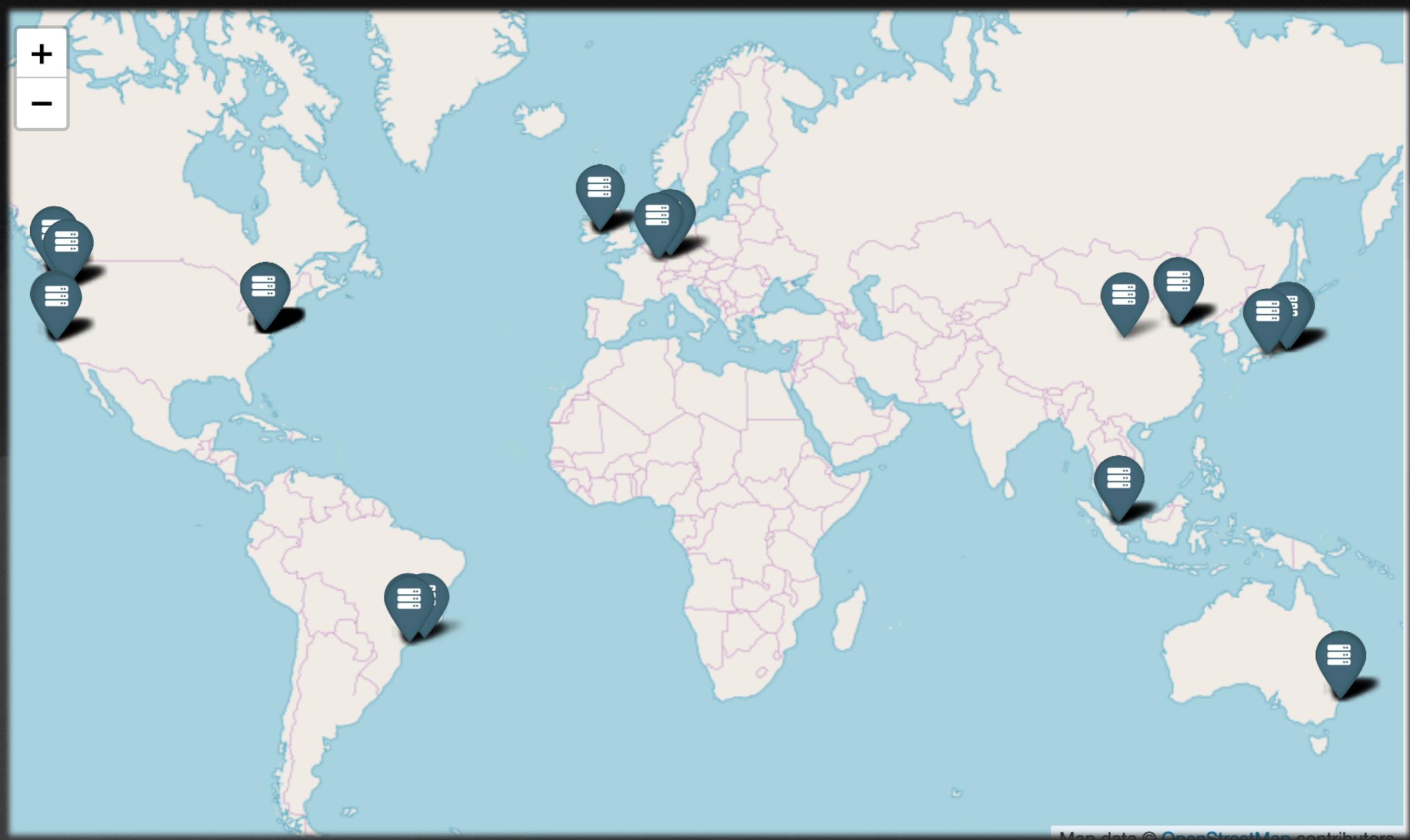
The Cloud

The Cloud does not exist. We give someone else the responsibility to manage IT and computing facilities.



The Cloud





Map data © OpenStreetMap contributors



Web foundation



What is the difference between the Internet and the web?

The Internet

The global system of interconnected computer networks that uses the Internet protocol suite (TCP/IP)^[b]

What is the difference between the Internet and the web?

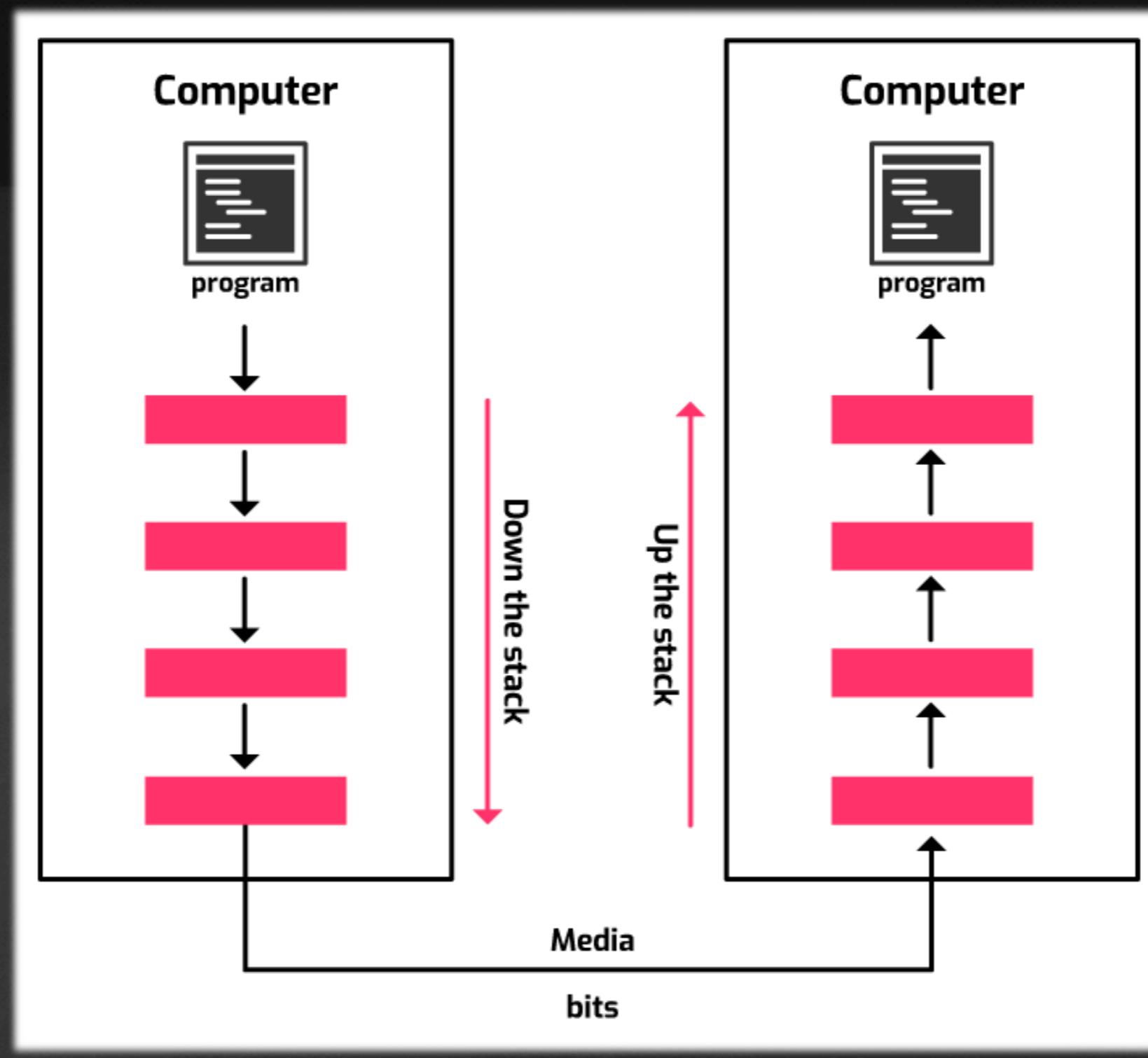
The World Wide Web

An **information system** that enables **content** sharing over the **Internet** through user-friendly ways

The Internet

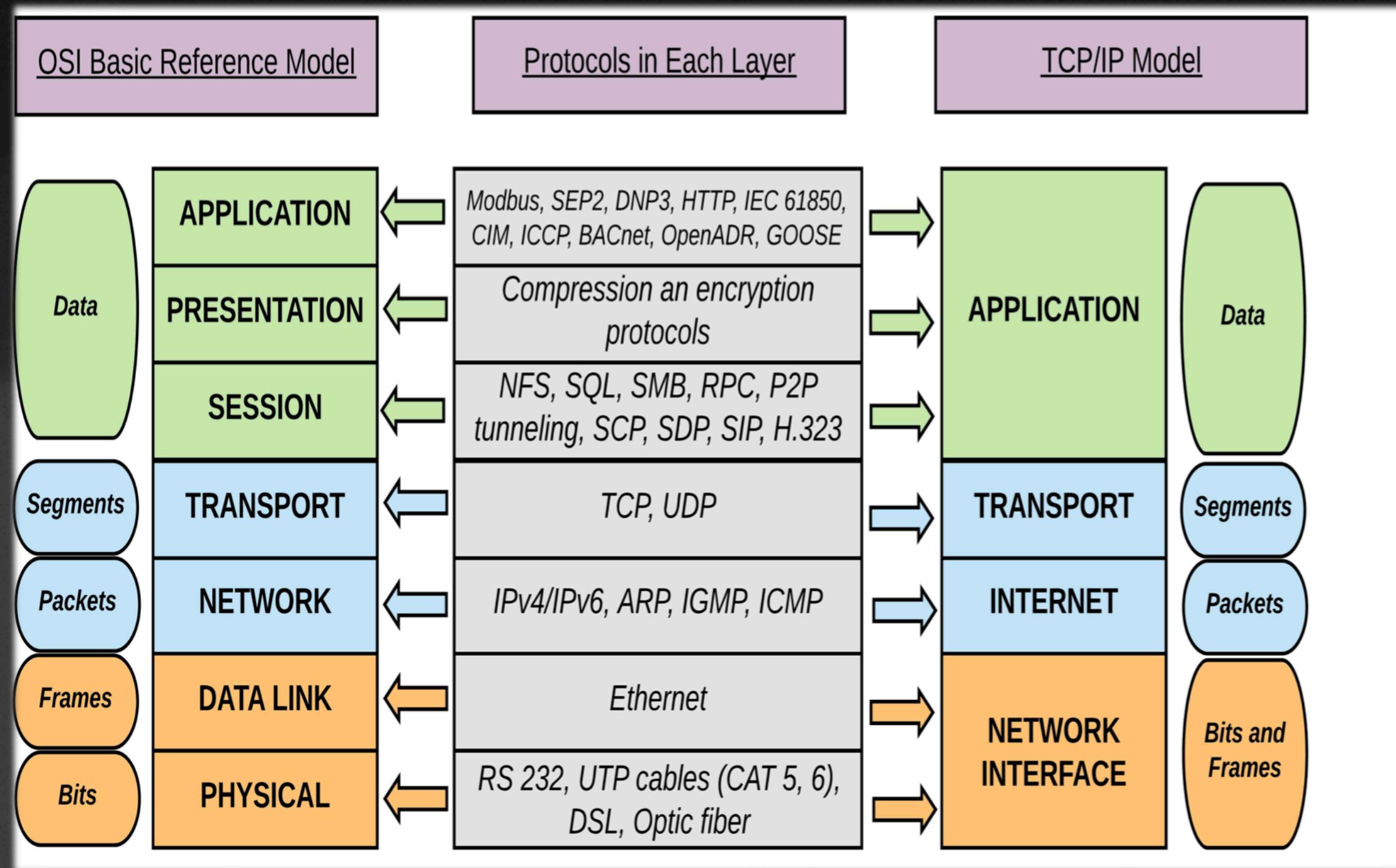
The global system of interconnected **computer networks** that uses the **Internet protocol suite (TCP/IP)**^[b]

The idea behind Internet communication

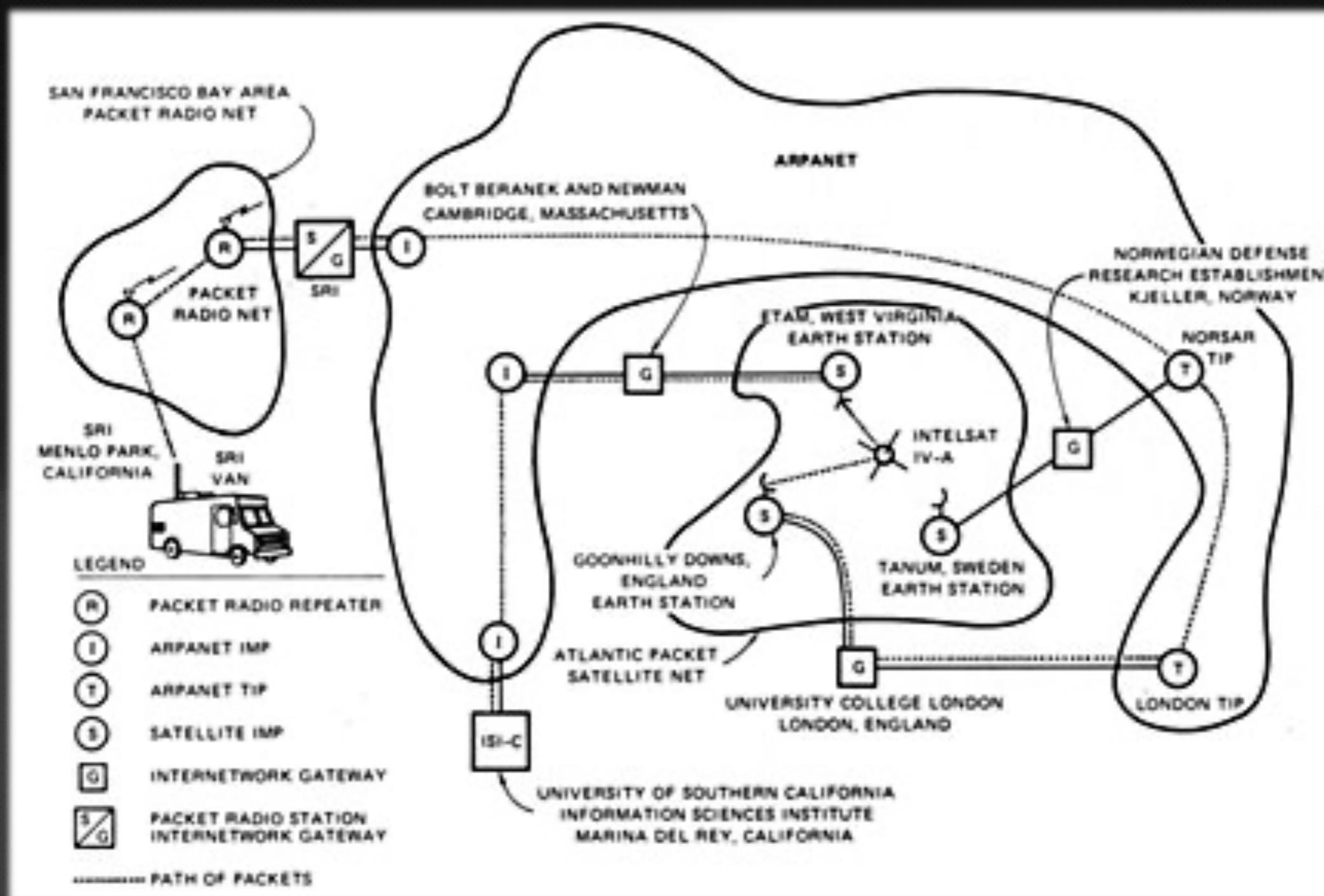


Protocols

Set of rules for formatting and processing data



First interconnected network



The Word Wide Web - the original architecture

https://www.legalanthology.ch/t/berners-lee-et-al_world-wide-web_1992.pdf

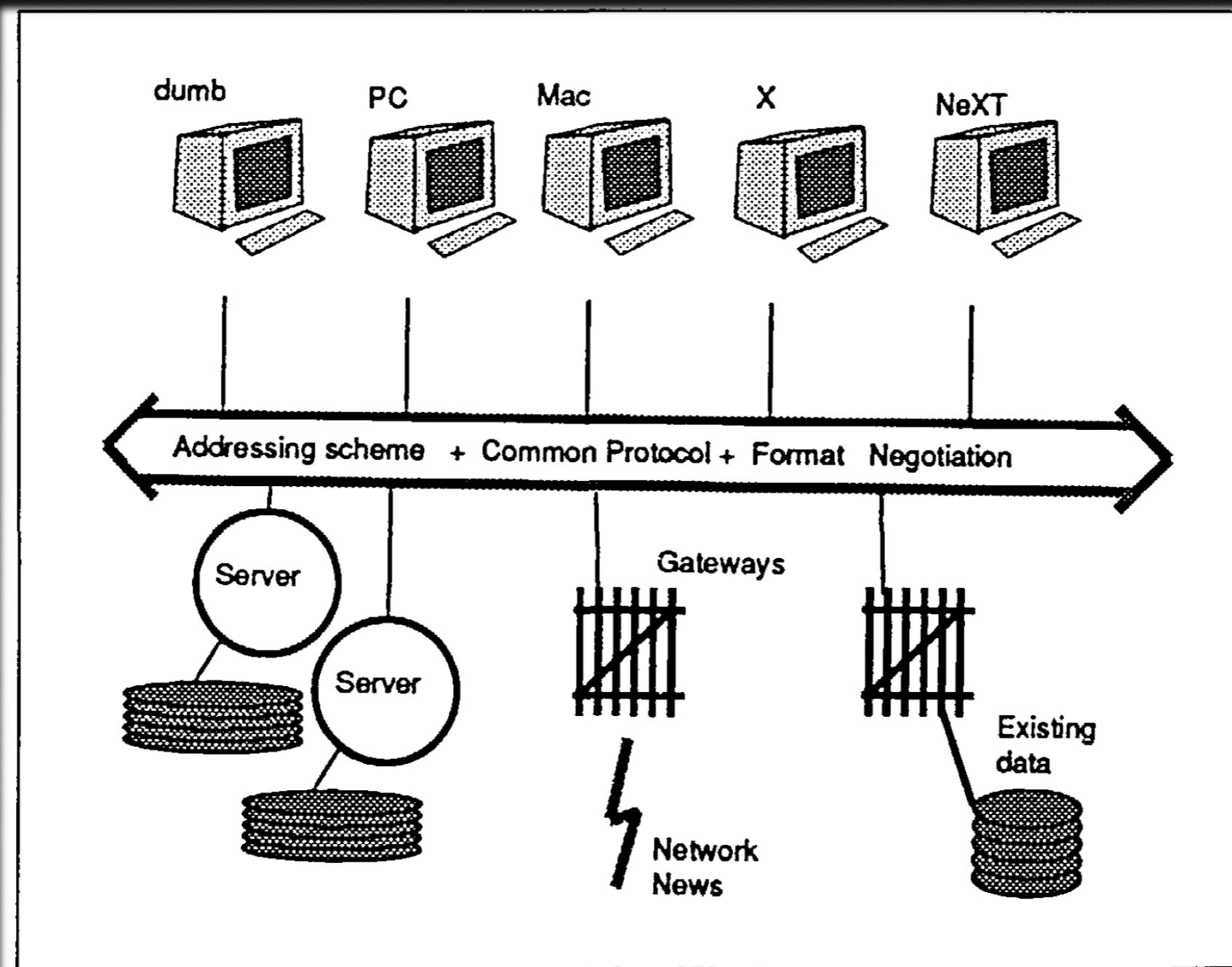
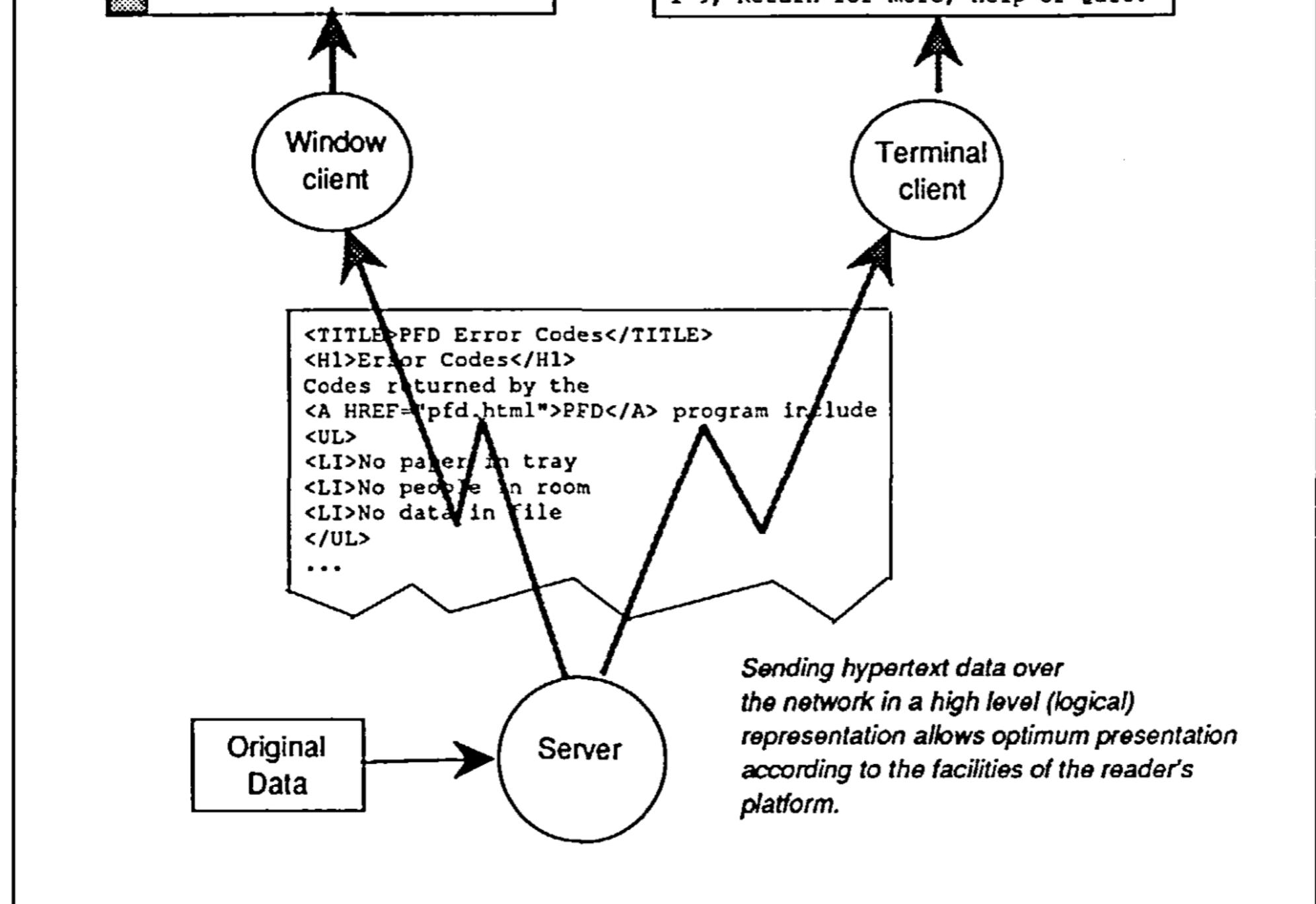
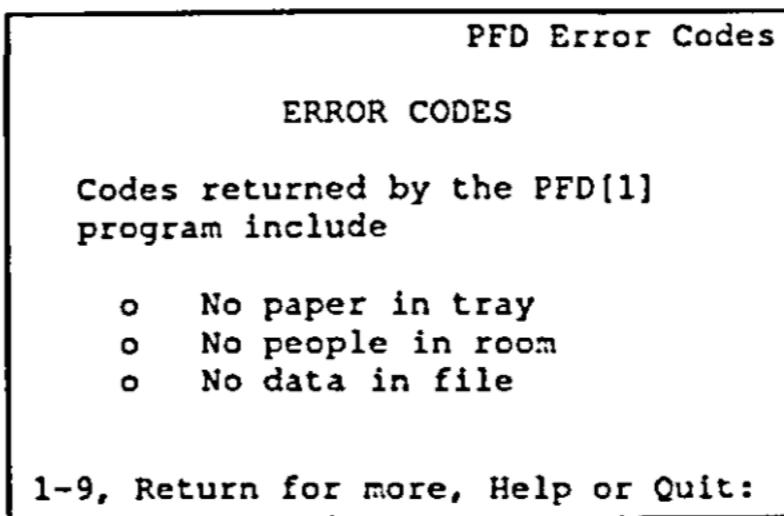
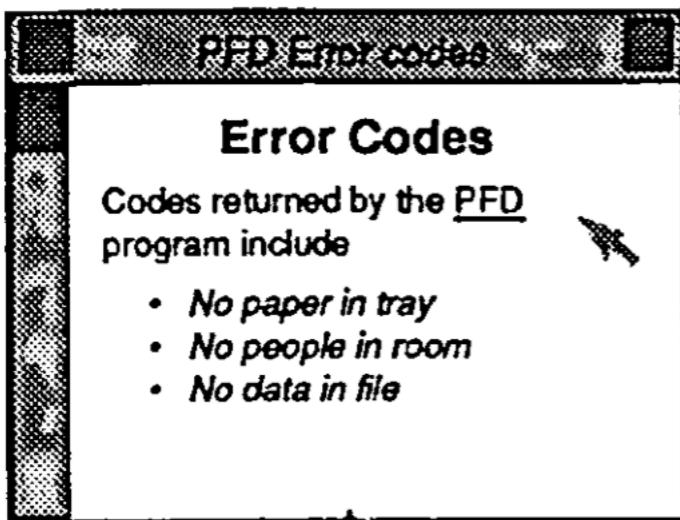


Figure 2. The W³ architecture in outline



HTTP

<https://www.rfc-editor.org/rfc/rfc9110.html>



HTTP exchange

3.9. Example Message Exchange

The following example illustrates a typical HTTP/1.1 message exchange for a GET request (Section 9.3.1) on the URI "http://www.example.com/hello.txt":

Client request:

```
GET /hello.txt HTTP/1.1
User-Agent: curl/7.64.1
Host: www.example.com
Accept-Language: en, mi
```

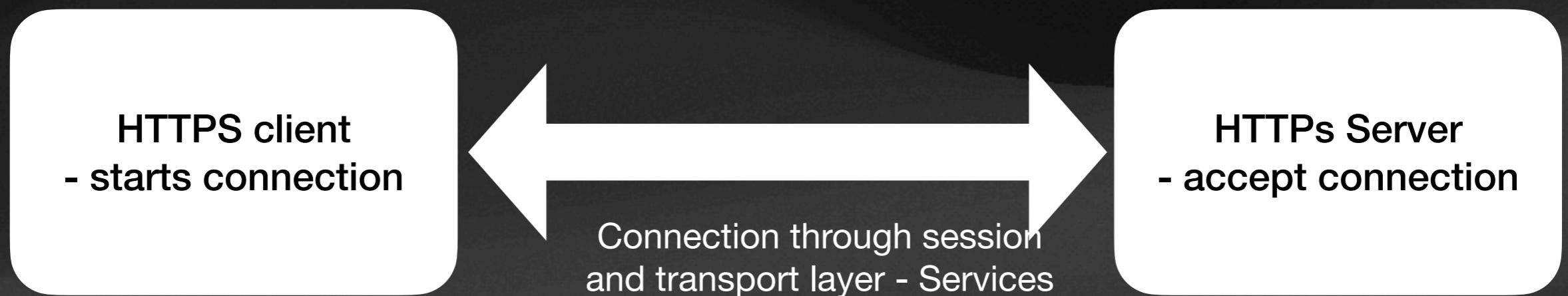
Server response:

```
HTTP/1.1 200 OK
Date: Mon, 27 Jul 2009 12:28:53 GMT
Server: Apache
Last-Modified: Wed, 22 Jul 2009 19:15:56 GMT
ETag: "34aa387-d-1568eb00"
Accept-Ranges: bytes
Content-Length: 51
Vary: Accept-Encoding
Content-Type: text/plain
```

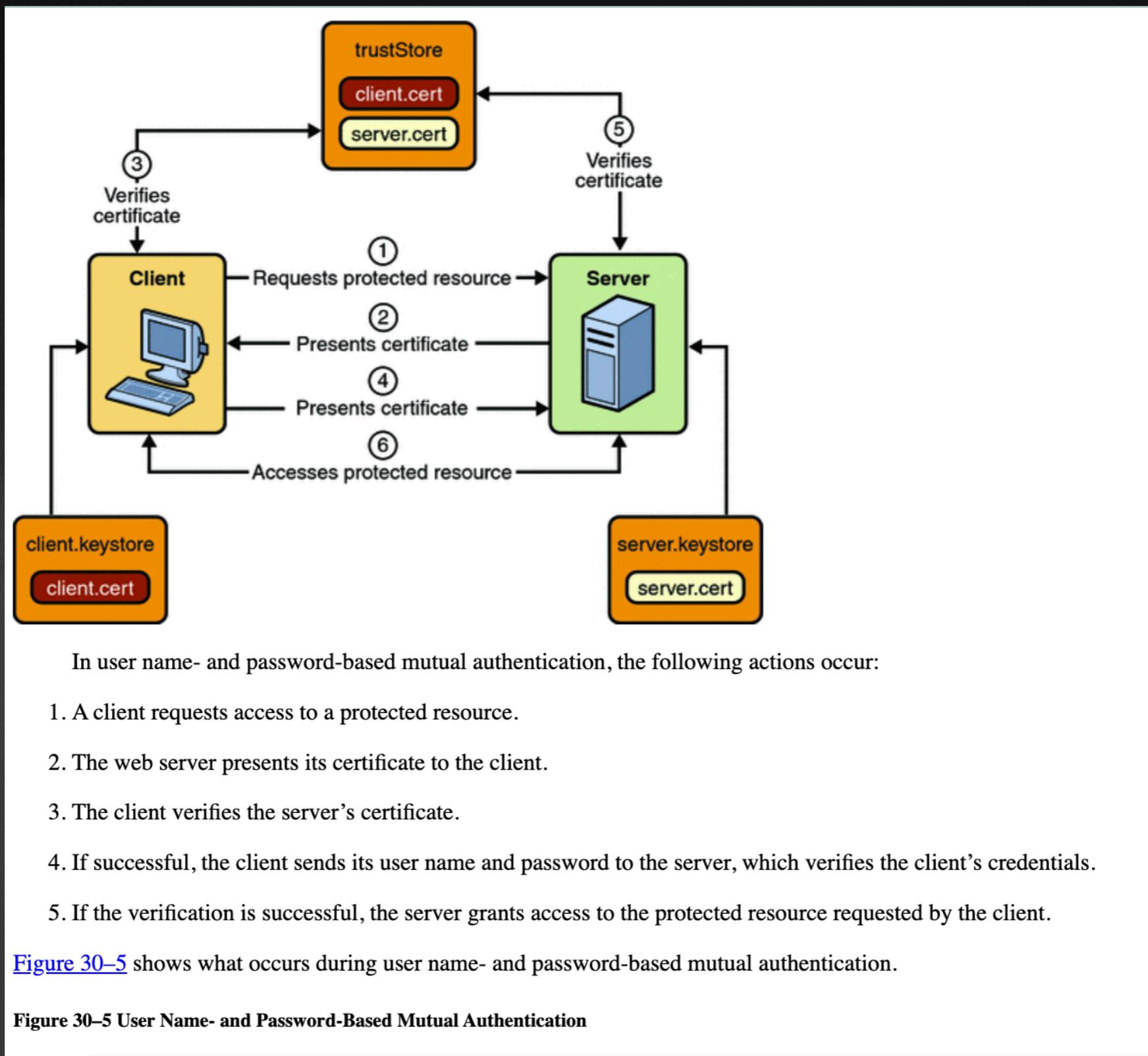
Hello World! My content includes a trailing CRLF.

HTTPS is HTTP secured

<https://www.rfc-editor.org/rfc/rfc9110.html>

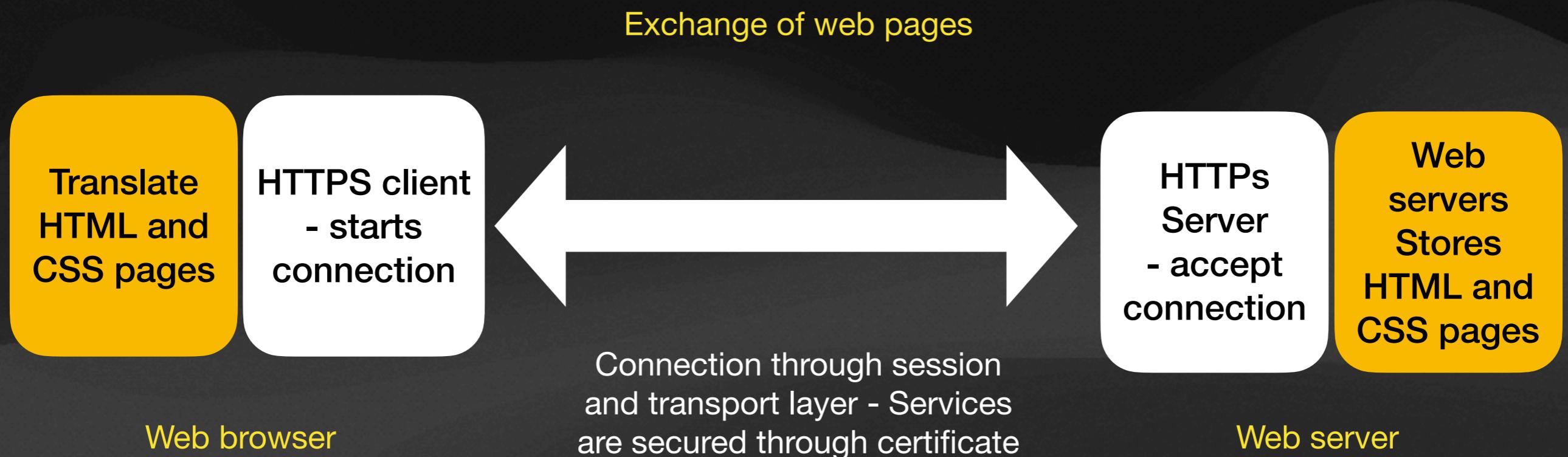


HTTPS is HTTP secured

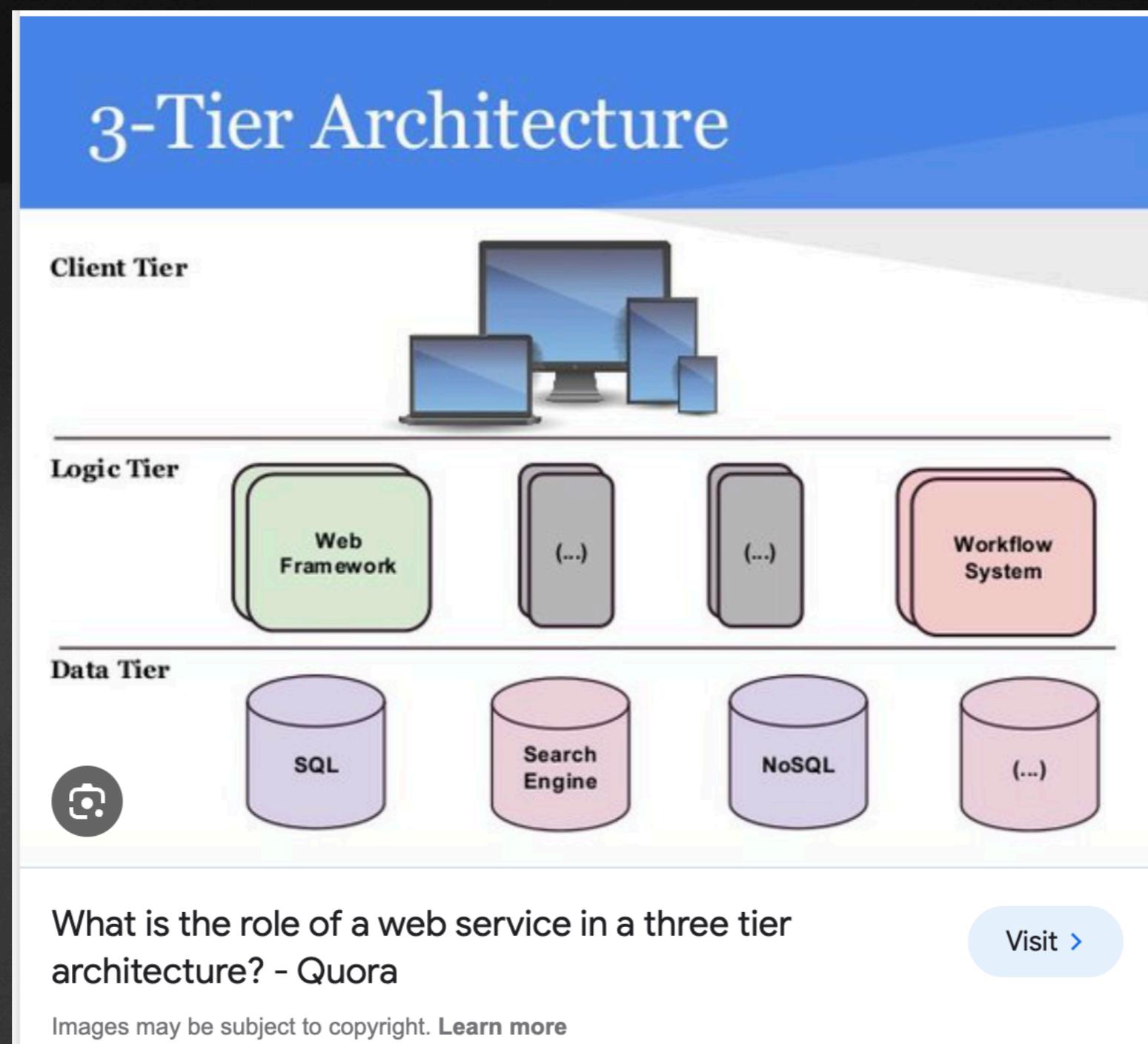


The web using HTTPS - static data

<https://www.rfc-editor.org/rfc/rfc9110.html>



The web with with no static data



Web API

HTTP - Server

HTTP - client

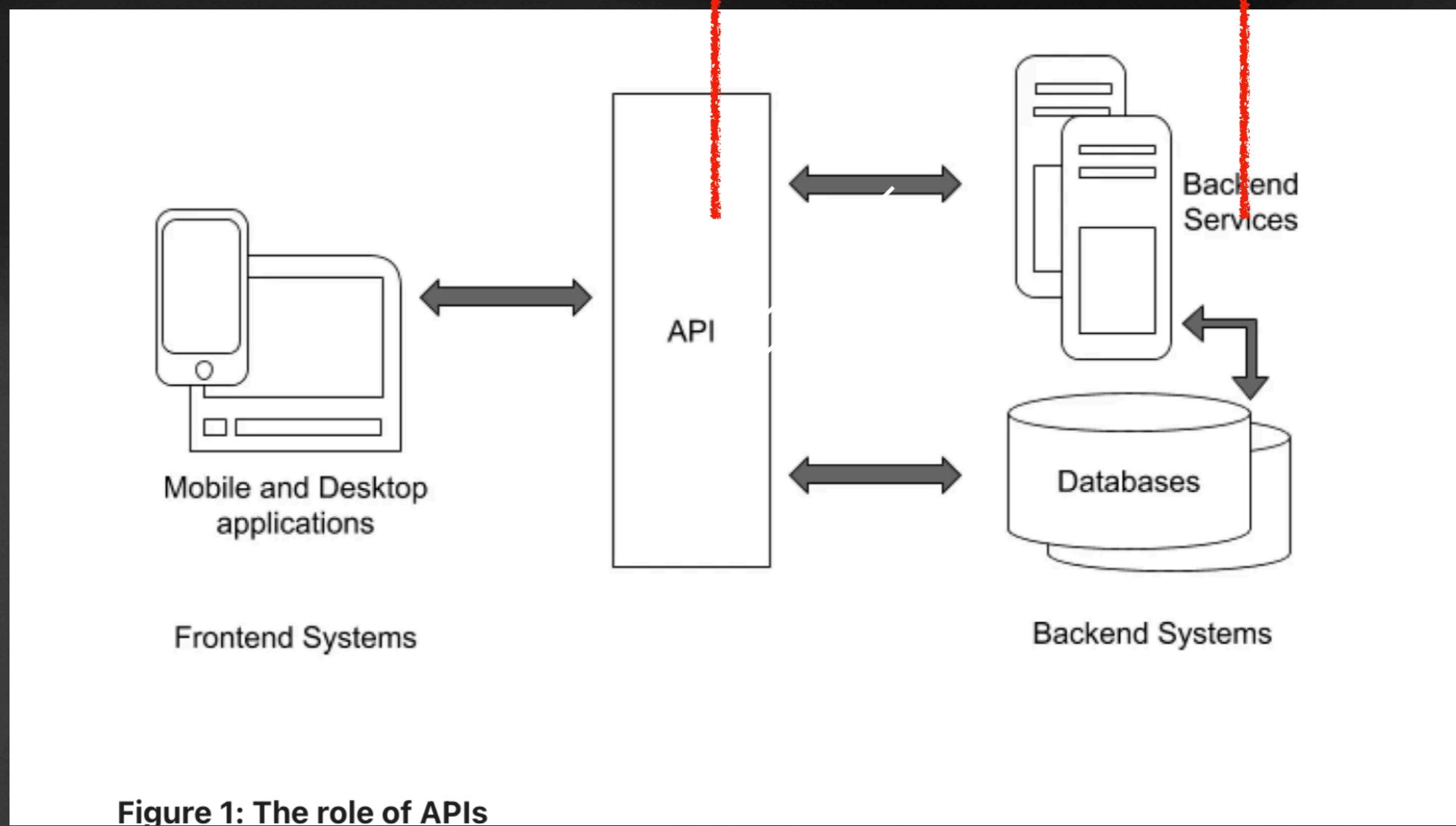
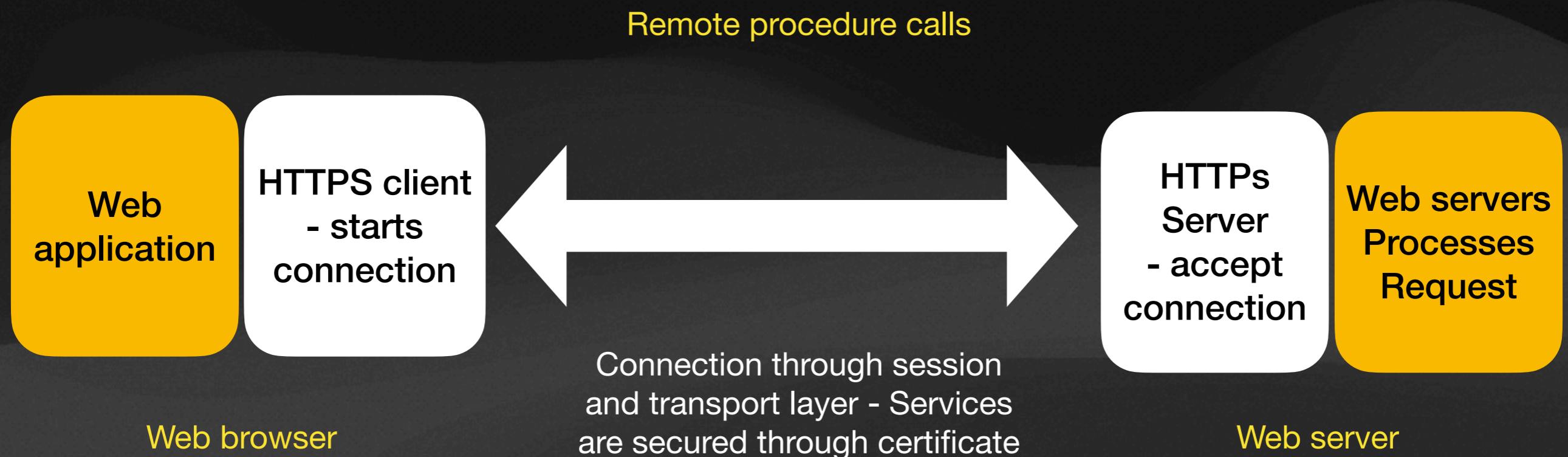


Figure 1: The role of APIs

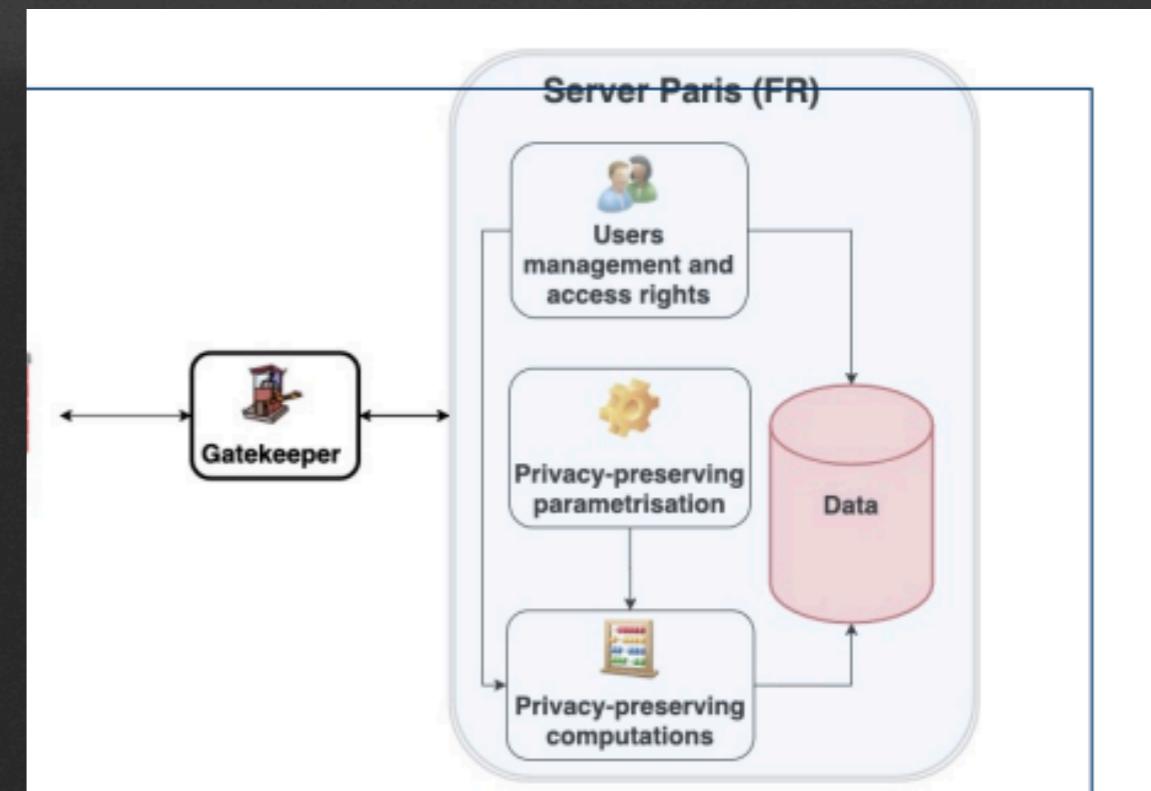
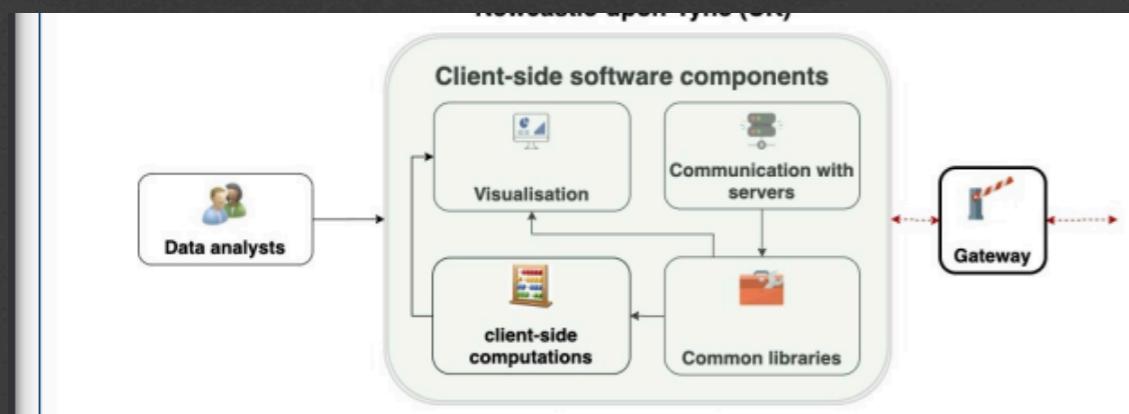
The web API using HTTPS -

<https://www.rfc-editor.org/rfc/rfc9110.html>



Please note

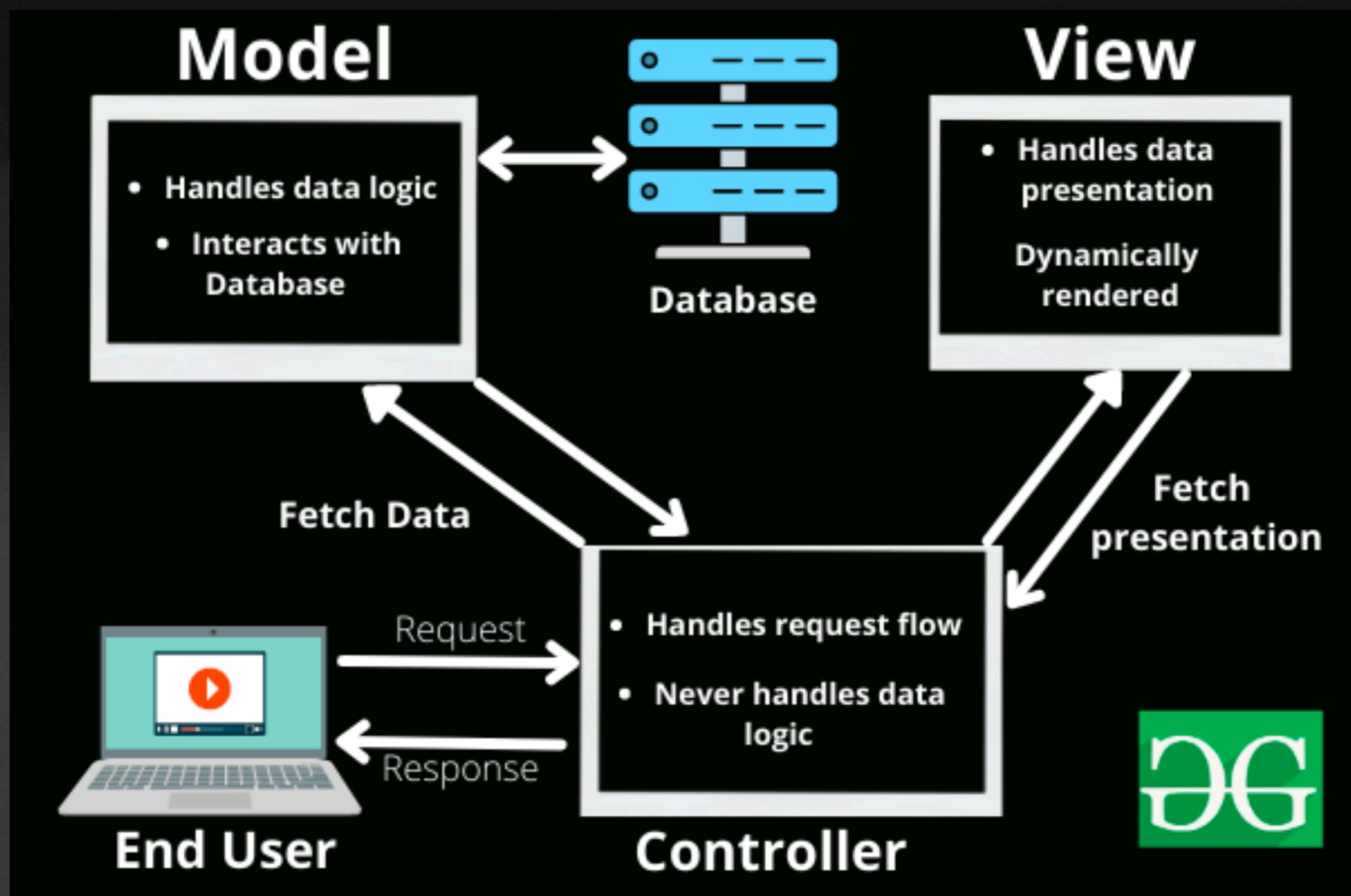
- The web remains the web.
- Web applications uses again some web technologies to connect computer programs with each others.



Architectures

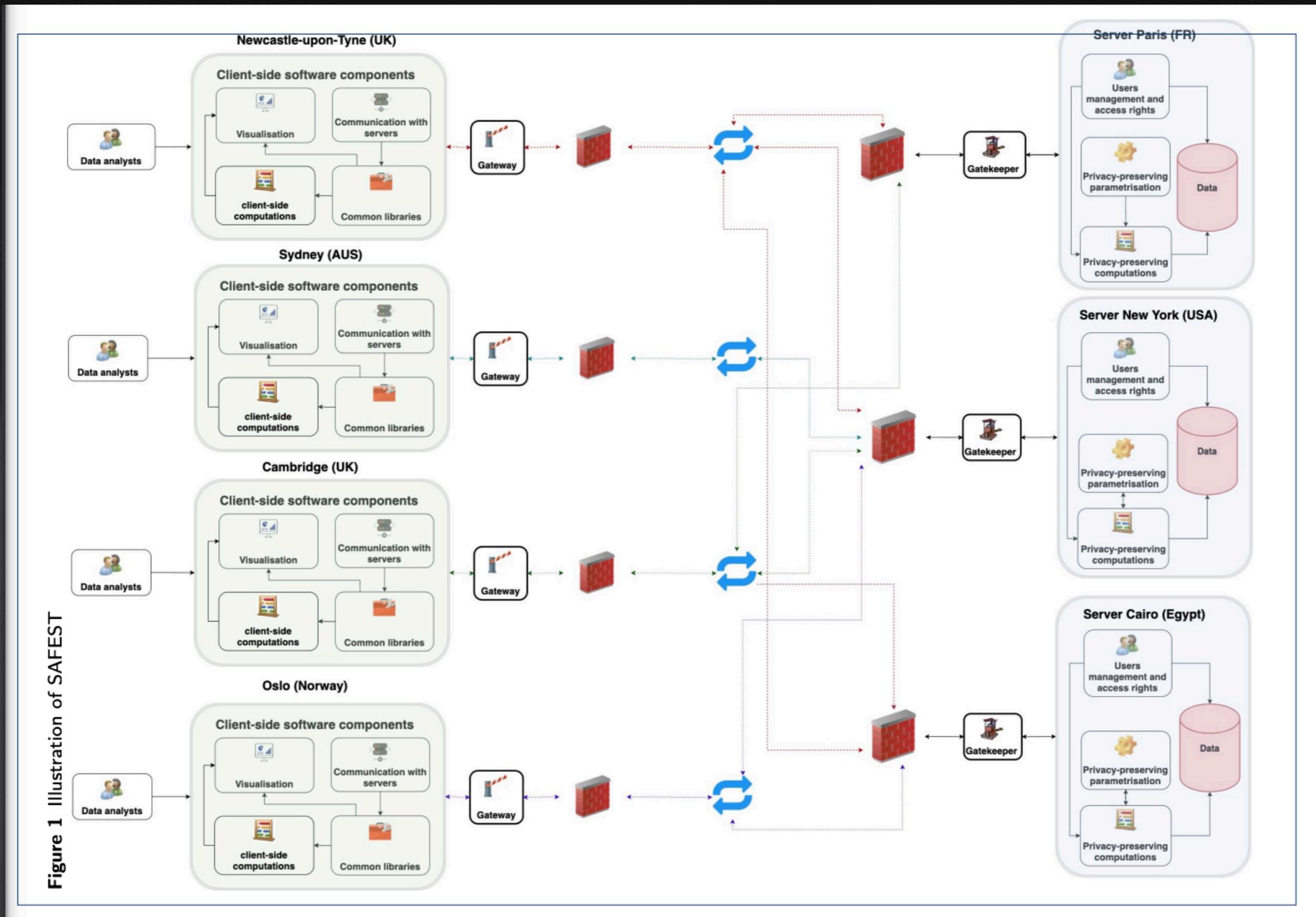
- Three-tier architecture - Silos
- MVC
- SAFEST
- SOLID Pods

MVC



SAFEST

<https://www.repository.cam.ac.uk/items/6a01b7fa-d2c6-4166-a954-cf7e572c42e6/full>



Solid Pods - Adding transparency

<http://solid.georgetown.domains/technical-component/>

