



ERASMUS+

Enriching lives, opening minds

WEB-TECHNOLOGIES



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www.confucius.by

WEB-тэхнологii

WEB-technologies

WEB-технологии

<https://www.confucius.by>



己所不欲，勿施於人



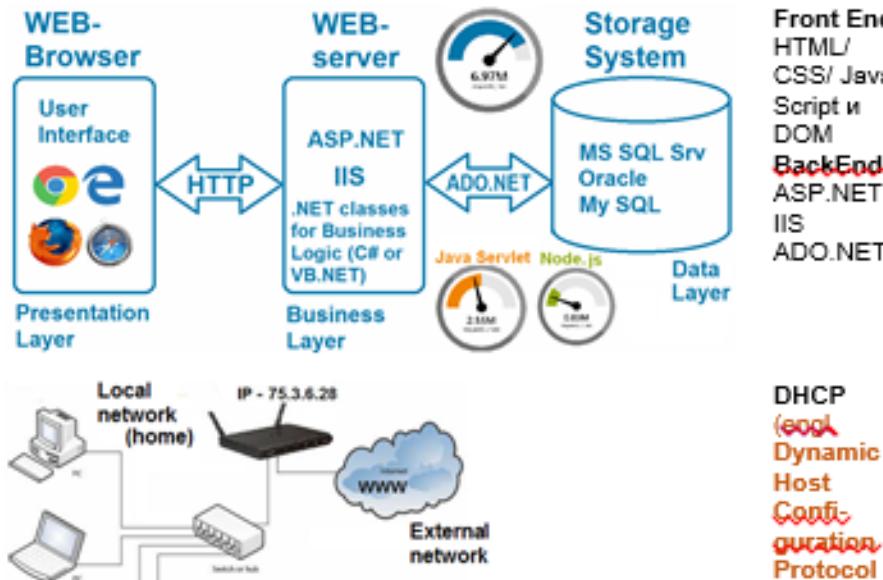
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Enriching lives, opening minds

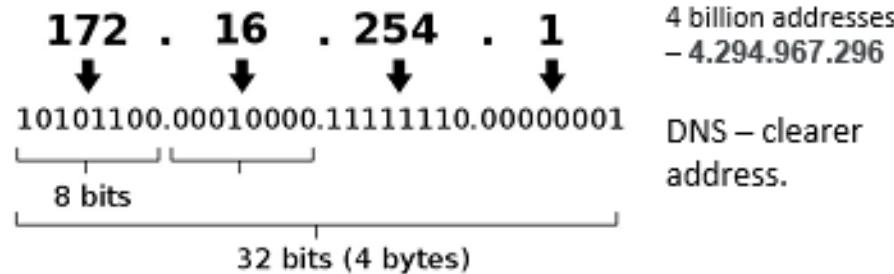
WEB-TECHNOLOGIES

ink +

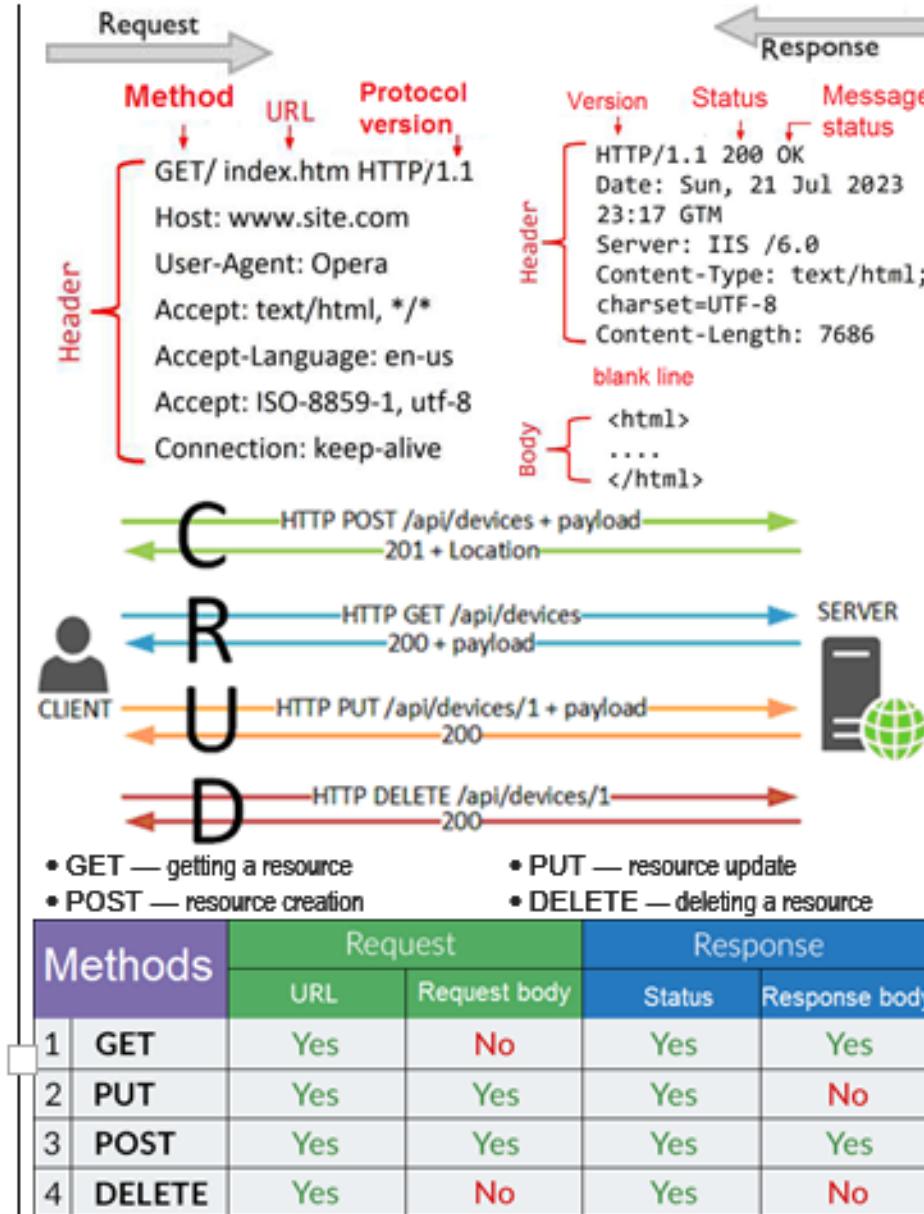
think



tracert – traceroute (in Apple) www.geotraceroute.com



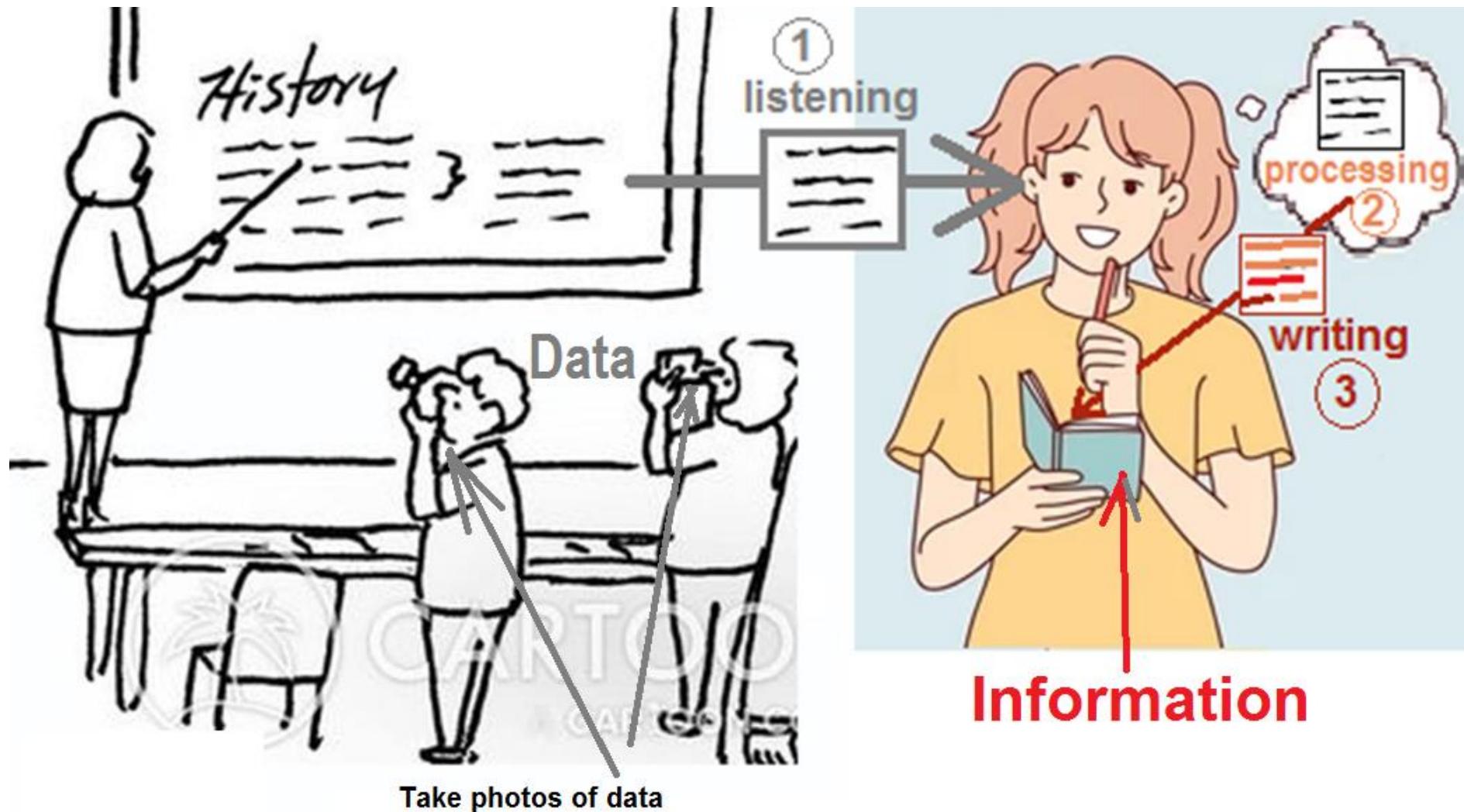
195.50.7.122 – sbmt.by, sbmt.bsu.by
 +375 (17) 222 80 10 – TATIANA A. TKALICH
 +375 (29) 254 07 92 – ANDREY O. YAROSHEVICH





You get the most out of lecture by doing some-thing such as taking notes If you can

Data vs Information



DIFFERENCE BETWEEN DATA AND INFORMATION



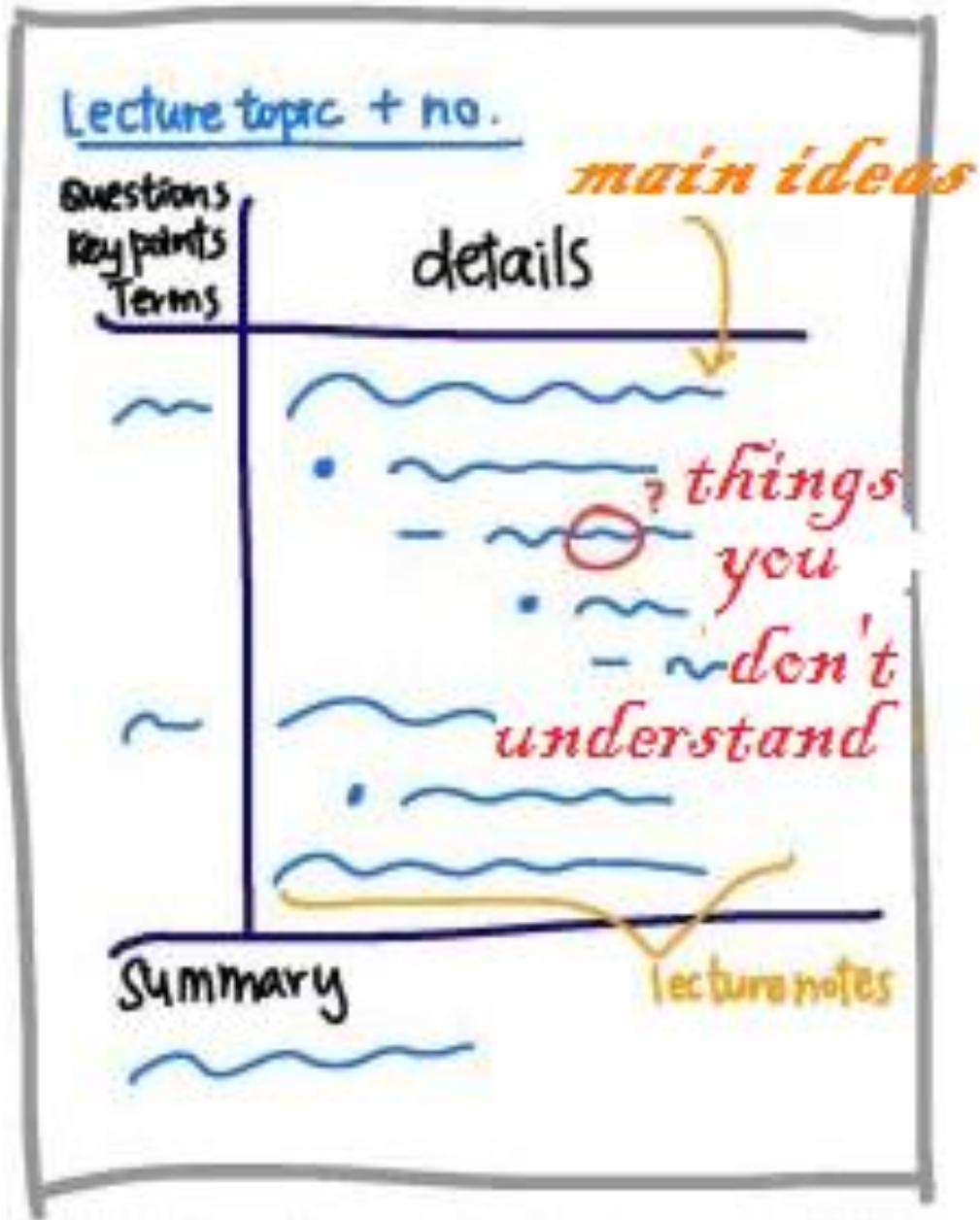
DATA

Data is raw, unorganized facts that need to be processed. Data can be something simple and seemingly random and useless until it is organized.



INFORMATION

When data is processed, organized, structured or presented in a given context so as to make it useful, it is called information.



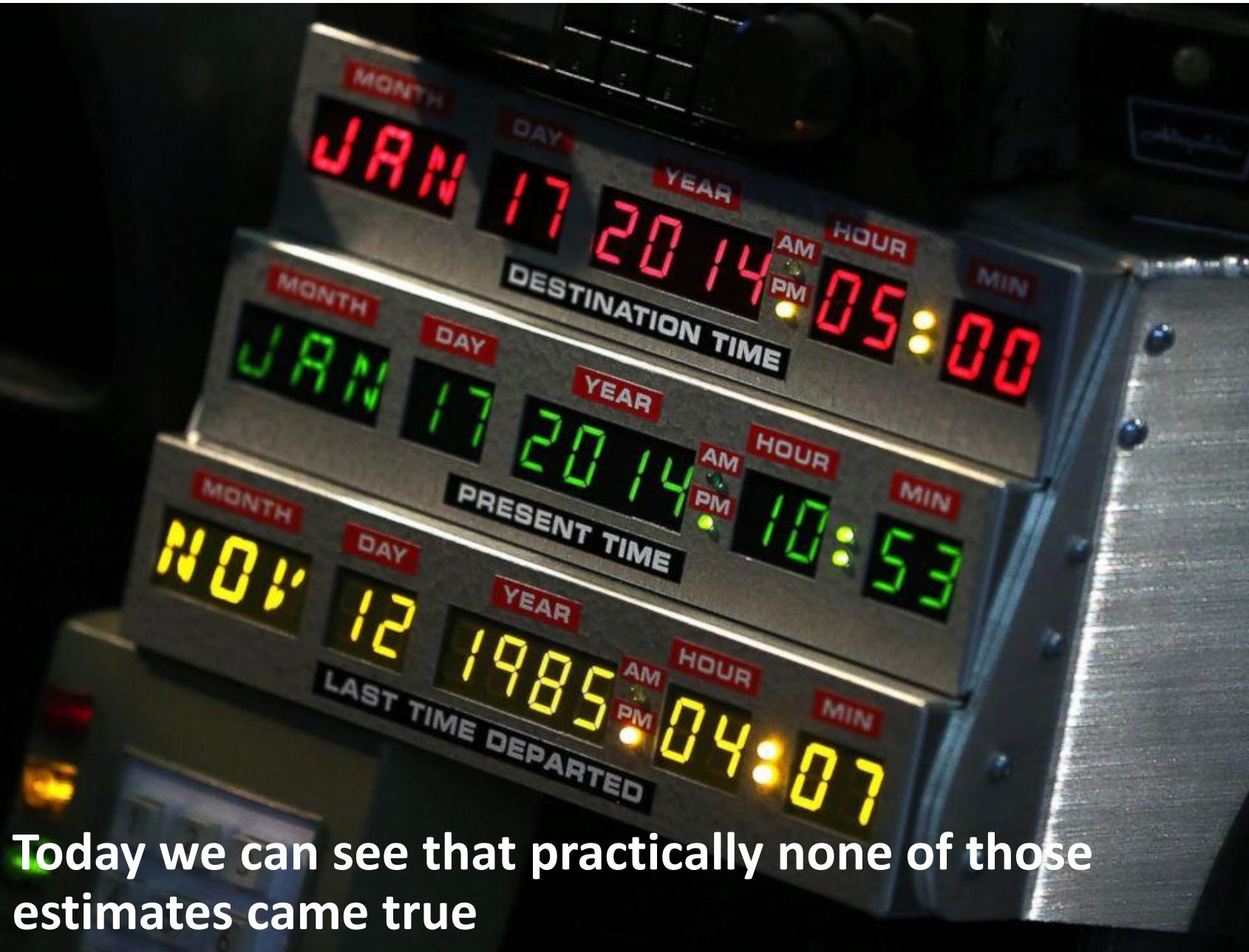
"Instead of taking notes, can I just purchase a transcript of today's lesson?"



When I was a student and learned to work on large mainframe computers (PC's were rare back then)



the movie Back To The Future, Part II was released, where the characters got to 2015



Today we can see that practically none of those estimates came true



People do not fly with hover boards



there are no flying cars (we drive cars with internal combustion engines just as in the times of Henry Ford)



Housewives still cook on kitchen stoves

The only field where the movie makers' hopes were not disgraced is the field of communication



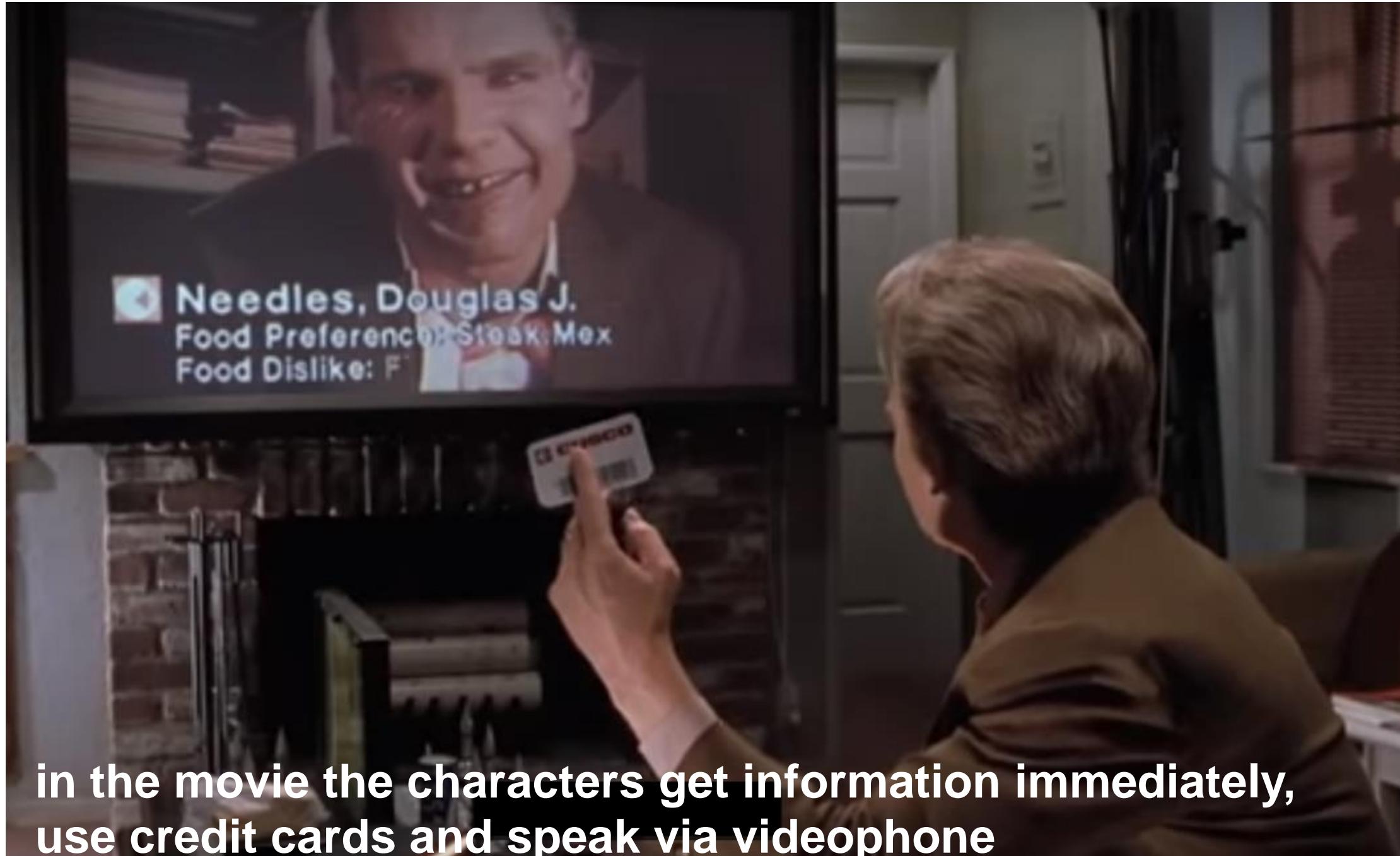
Needles, Douglas J.

Age: 47

Birthday: August 1968

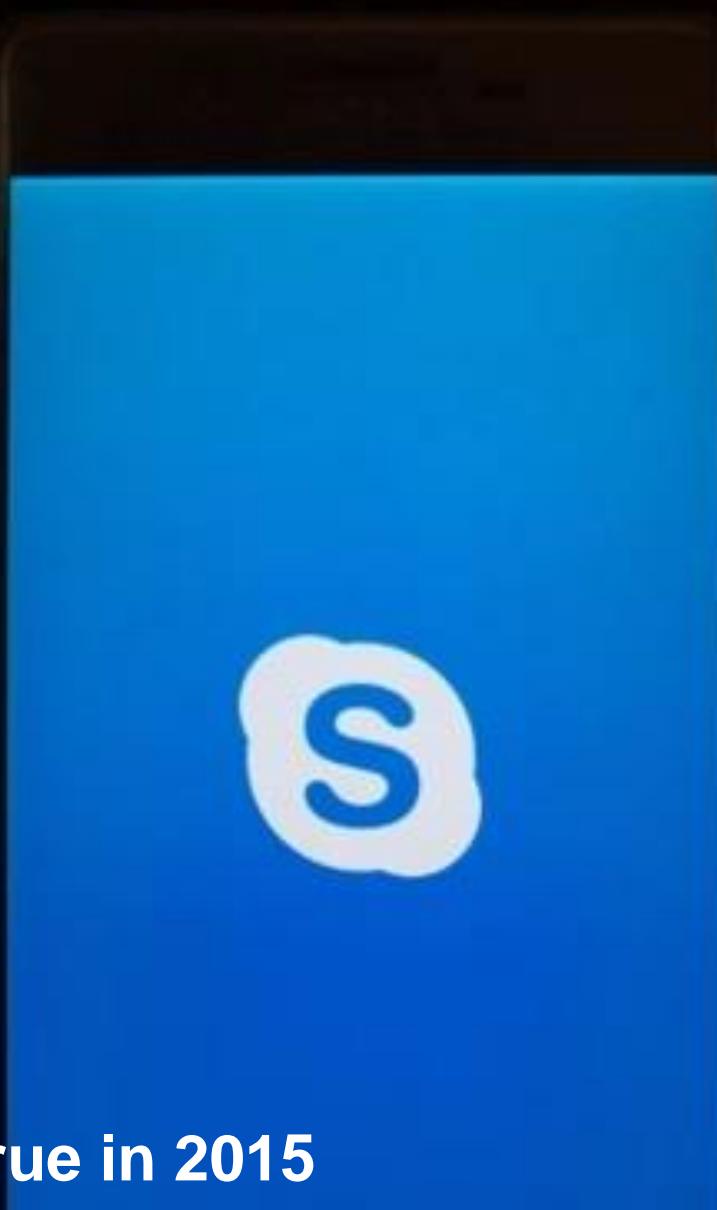
TheJits
will never find out.
Oh. Uh-huh.

<https://youtu.be/Q0VGRIEJewA>



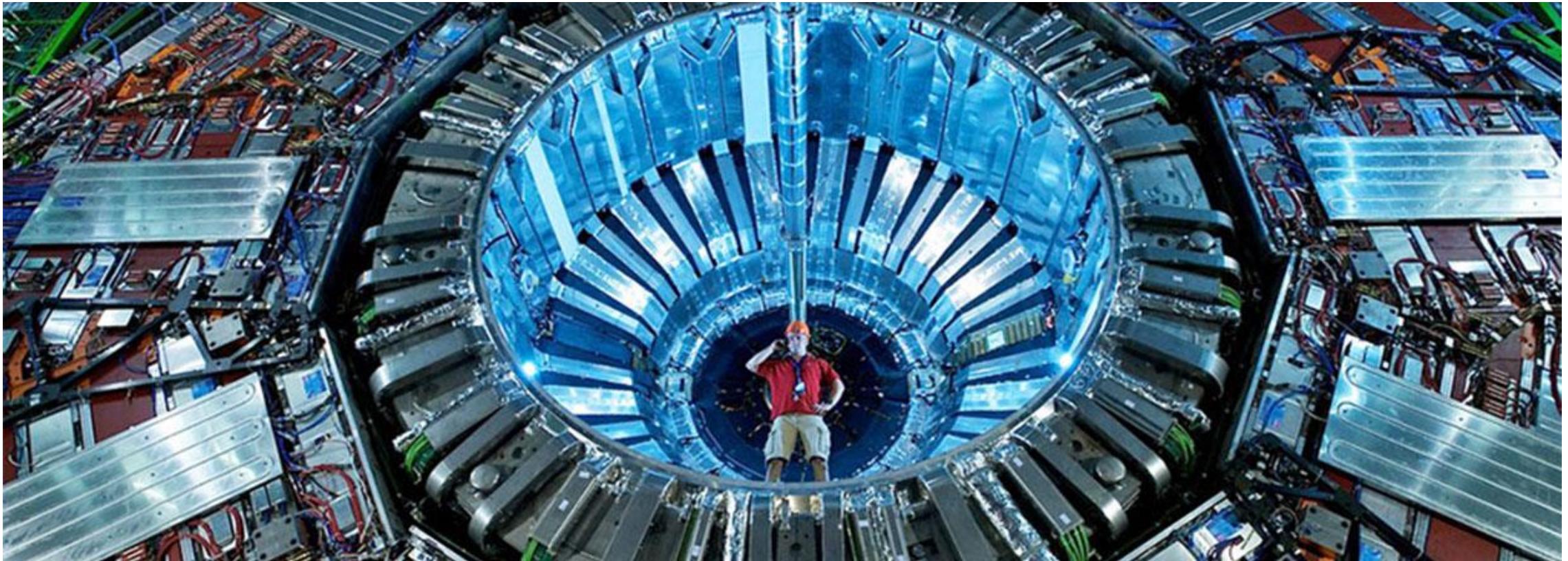
in the movie the characters get information immediately,
use credit cards and speak via videophone

```
and this estimate came to
```

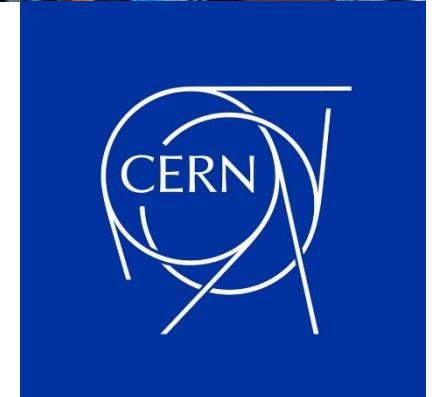


```
},i=r.data("button"),s=$tymo.m("object");
fn.button.defaults={loadingText:"loading..."},e(document).on("click.button.data-api",oest(".btn")),n.button("toggle")))(w);
rs=this.$element.find(".carousel-indicators").pause(this)).on("mouseleave",e.proxy(clearInterval(this.interval),this).opt.options.interval),this.opt.getActiveIndex.parent().children(),this.$items.indexLength-1);t<0)return;return this.sliding>n?"next":"prev",e(this.$items[t])),p
ort.transition.end((this.$element.transitionMulti,this)),next:function(){if(this.sliding("prev")),slide:function(t,n){t=="right",u=t=="next"?first":last?e.Event("slide",{"relatedTarget":i[0],data:"active"}).removeClass("active"),this.$dClass("active"))):!e.support.transition?i.addClass(t),i[0].offsetWidth.$(t,o).join(" ")).addClass("active")int.trigger("slide"),0))):else(this.$element,this.sliding+1,this.$element.trigger("slide",this.$items[t])),each(function(){var r=e(this);if(r.is("string")?n:s.slide;i[r.data("carousel")].fn.carousel.defaults={interval:500},return e.fn.carouselFn(this),e(document).on(n.attr("data-target")),(r=n.attr("data-slide-to"))&&i.data("rict");var t=function(t,n){this.$element=e(this.options.parent),this.options.addClass("width");return e?"width":height},t=this.dimension(),n=e.camelCase(r.length){i[r.data("collapse")]:t[t](0),this.transition("addClass",e),!1{var t;if(this.transitioning){this.$element.removeClass("active")}}}});
```

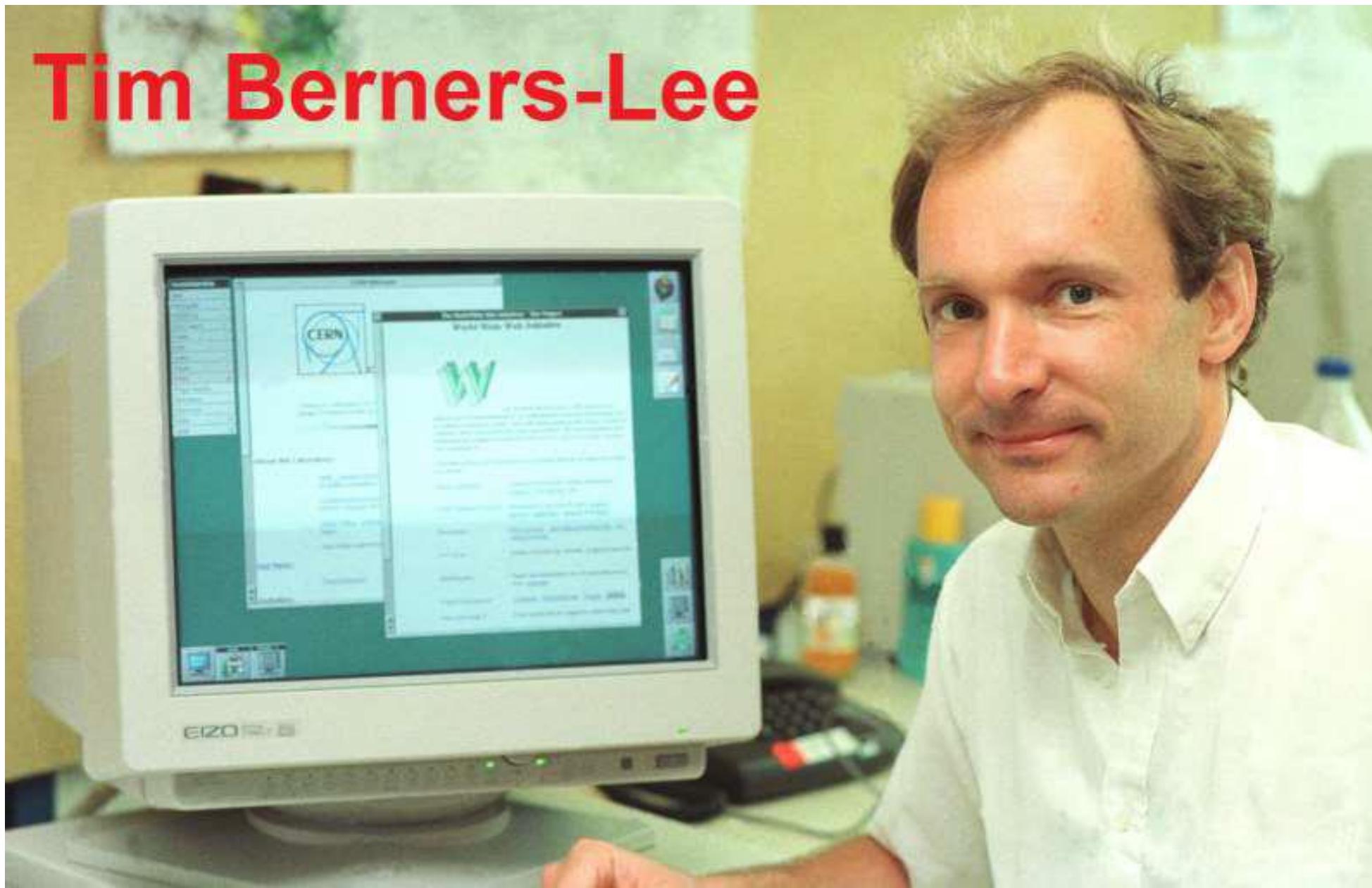
and this estimate came true in 2015



**The World-Wide Web technologies which were originally designed in CERN
(European Organization for Nuclear Research)**



Tim Berners-Lee



as a means
of delivering
documents
from one
scientific
establish-
ment
to another
one



**are now used
as a platform
for complex
interactive
applications**

Skype for Business

What's happening today?

Denis Dehenne
In a meeting
Recording Studio

Find someone

GROUPS STATUS RELATIONSHIPS NEW

FAVORITES

- Junmin Hao - Available - Video Capable
- Molly Dempsey - Inactive 25 mins
Think Do Scale
- Sara Davis - In a conference call
Be kind

FINANCE (0/1)

Molly Dempsey - Inactive 25 mins
Think Do Scale

LEGAL (0/1)

MARKETING (1/4)

- Garth Fort - offline 3 days
Skype ... #1 in communication
- Janet Schorr - Offline
Please keep this window open for important updates

https://preview.web.skype.com

Amy

Last seen days ago |

ssages

...

Contacts

+ Chat

6/6/2018

er's conversa... 5/13/2018
tion_host_aa...

2/26/2018

Test Service 10/17/2017
- 5s

Type a message here

Microphone blocked

This page has been blocked from accessing your microphone.

Always allow https://preview.web.skype.com to access your microphone

Continue blocking microphone access

Microphone: Microphone (Blue Snowball) ...

This page may need to be reloaded before the new settings take effect.

Manage

Done

Wave

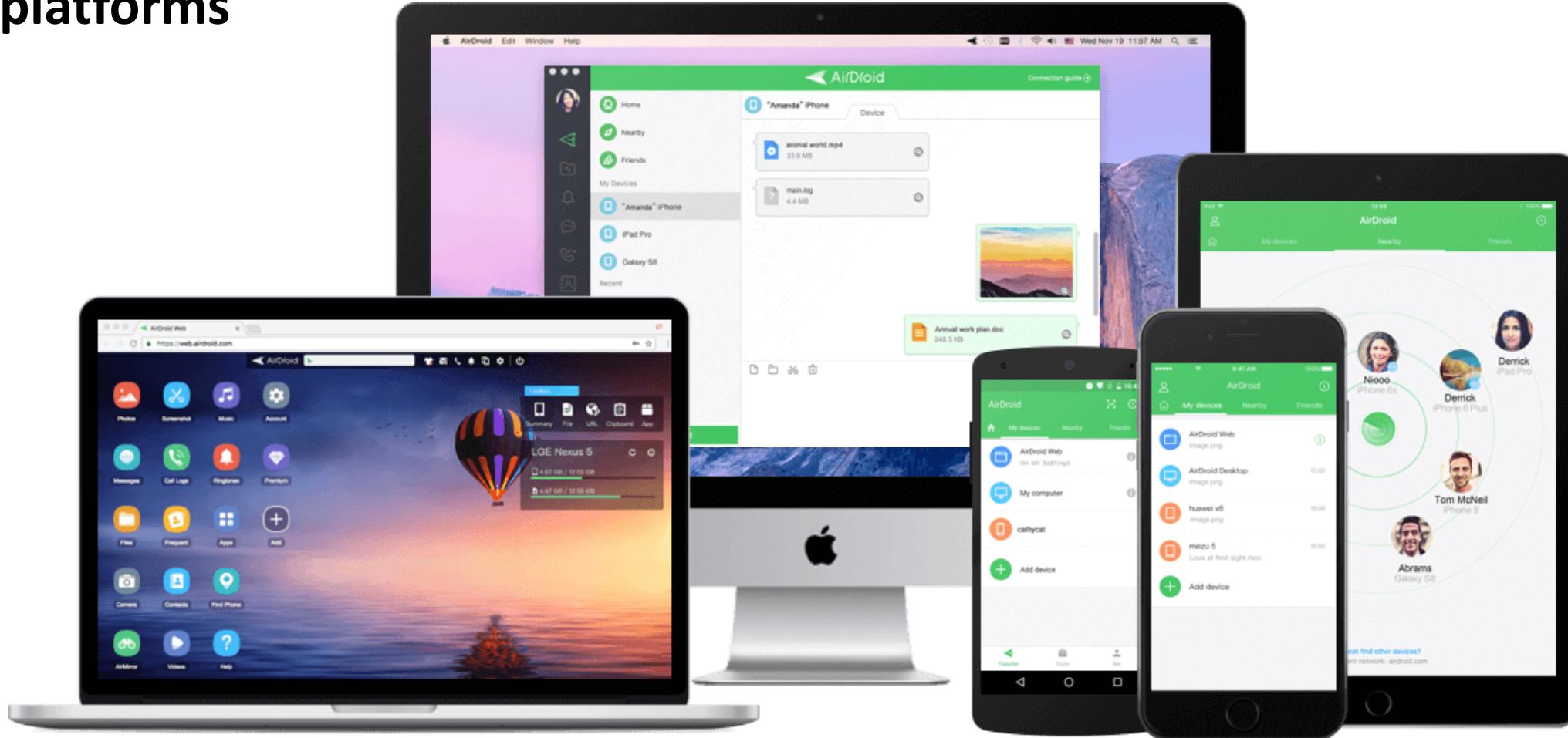
which slowly but steadily drive out installable applications

Desktop Client · Feedback · Language (en-US)

Terms of use · Privacy and cookie policy · © 2018 Skype and/or Microsoft.

WEB applications have: + anytime access from different devices,
+ automatic updating

+ a possibility of integration of different applications written for different platforms



This course introduces to these different WEB technologies and gives experience in creating WEB applications.

Students learn theoretically and get practical skills in

- markup languages,
- scripting languages,
- network protocols,
- graphics and video-images,
- event-driven programming,
- object oriented programming,
- databases.

That is, those technologies which allow constructing modern WEB applications.



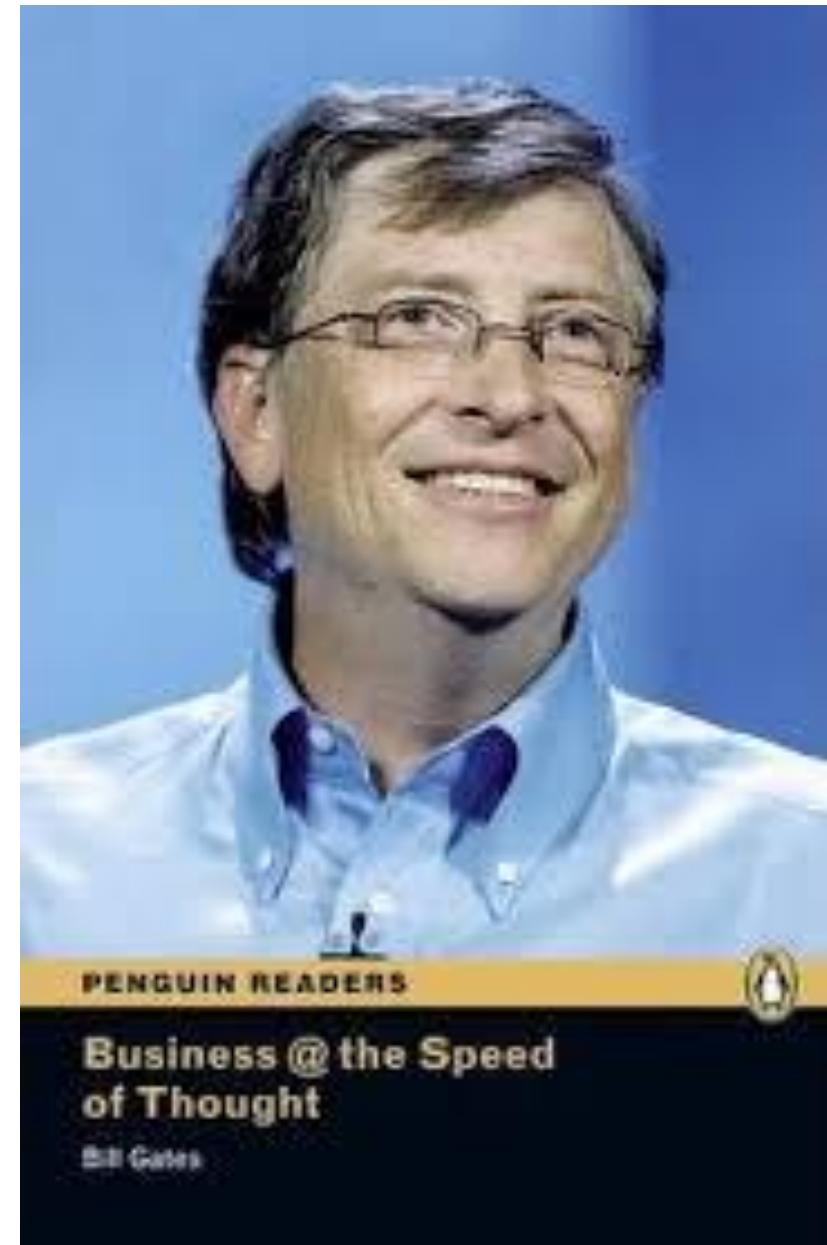
There is a difficulty with selecting technologies of WEB programming, because this is the field where changes happen most rapidly.



In his book Bill Gates told that Microsoft updates these technologies almost completely once every 3 years.

And the course has to be updated very often –

those technologies which are mainstream today may lose their positions within a year.

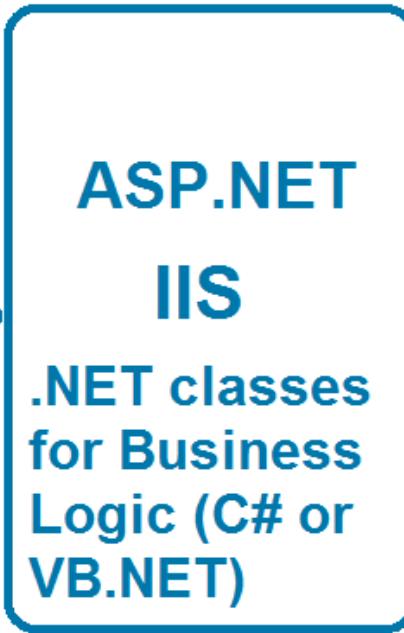


WEB- Browser



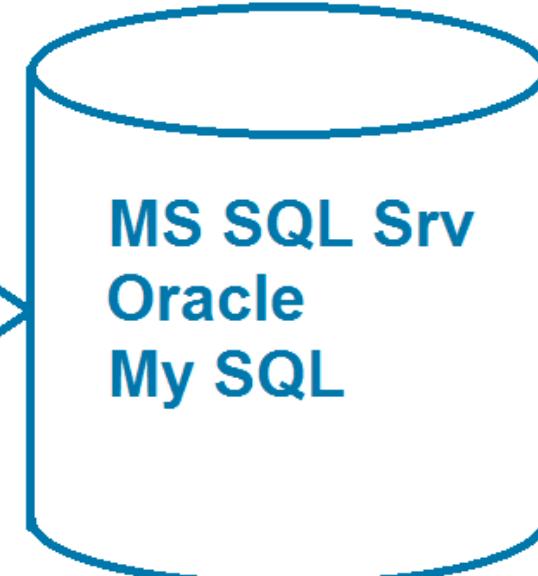
**Presentation
Layer**

WEB- server



**Business
Layer**

Storage System

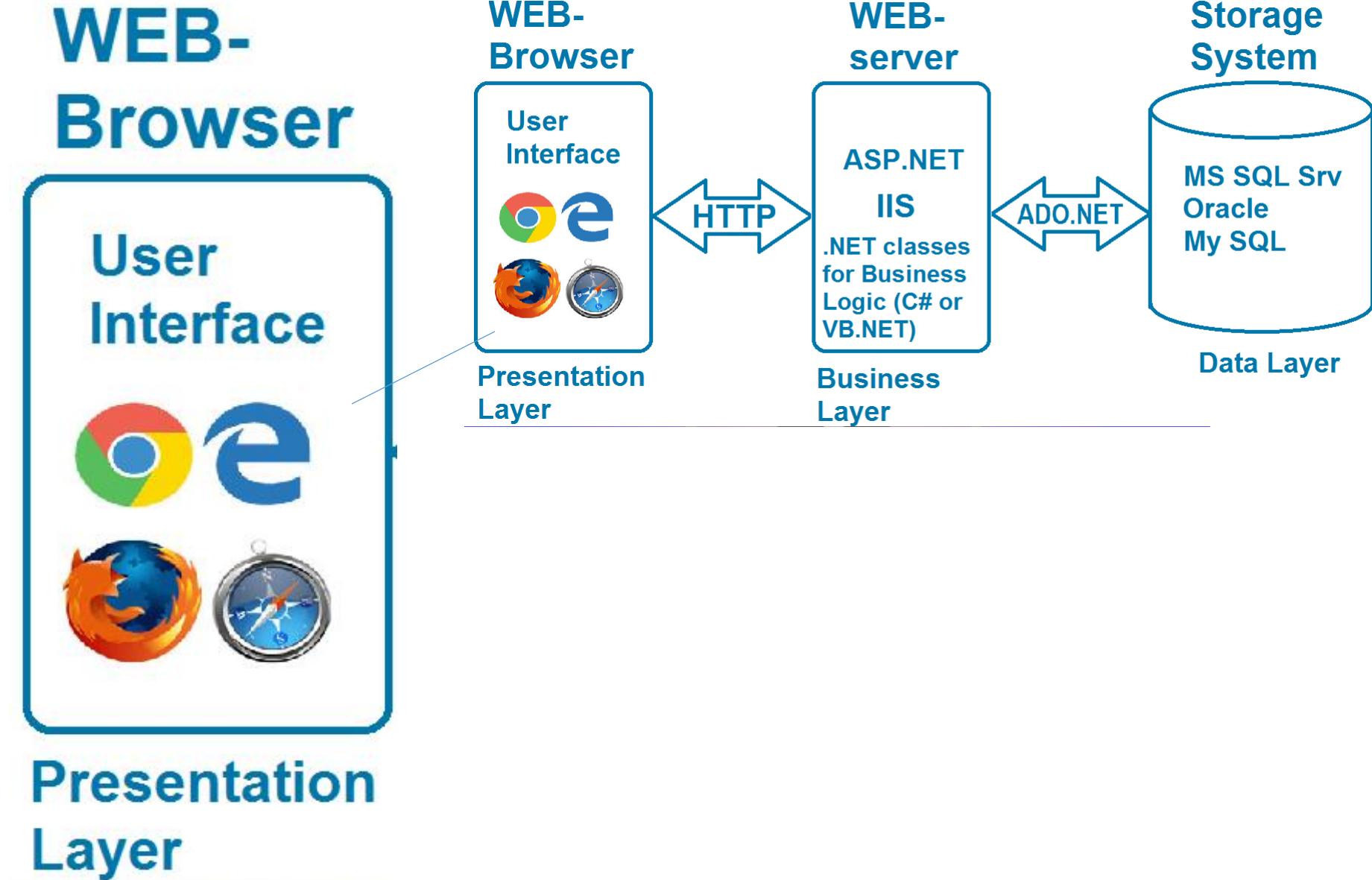


Data Layer

**However something remains relatively stable –
programming concepts and application architecture**

The architecture of a WEB application usually includes the following component parts:

Application interface in a Web Browser (Front End)



Business
Layer

server end
(Back End)

WEB- server

ASP.NET
IIS

.NET classes
for Business
Logic (C# or
VB.NET)

Business
Layer

WEB-
Browser

User
Interface



Presentation
Layer

HTTP

WEB-
server

ASP.NET
IIS
.NET classes
for Business
Logic (C# or
VB.NET)

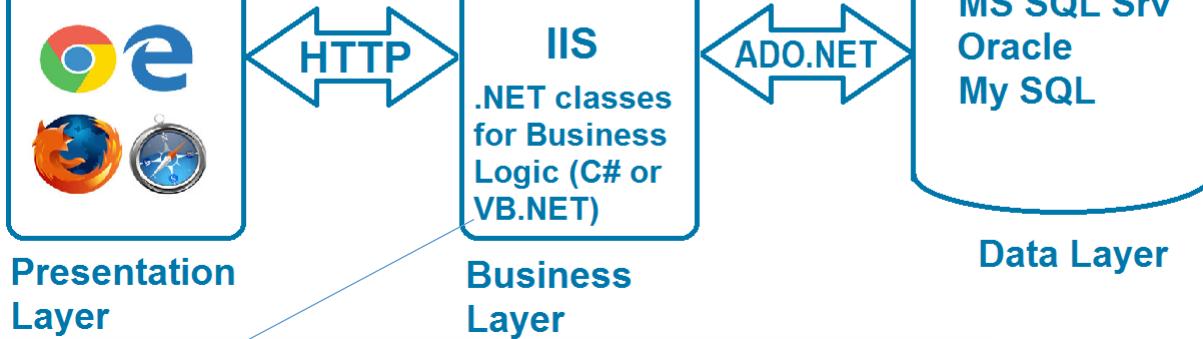
Business
Layer

ADO.NET

Storage
System

MS SQL Srv
Oracle
My SQL

Data Layer



**data storage
system**

(Data Storage)

**Storage
System**



Data Layer

**WEB-
Browser**

User
Interface



**Presentation
Layer**

**WEB-
server**

ASP.NET

IIS

.NET classes
for Business
Logic (C# or
VB.NET)

**Business
Layer**



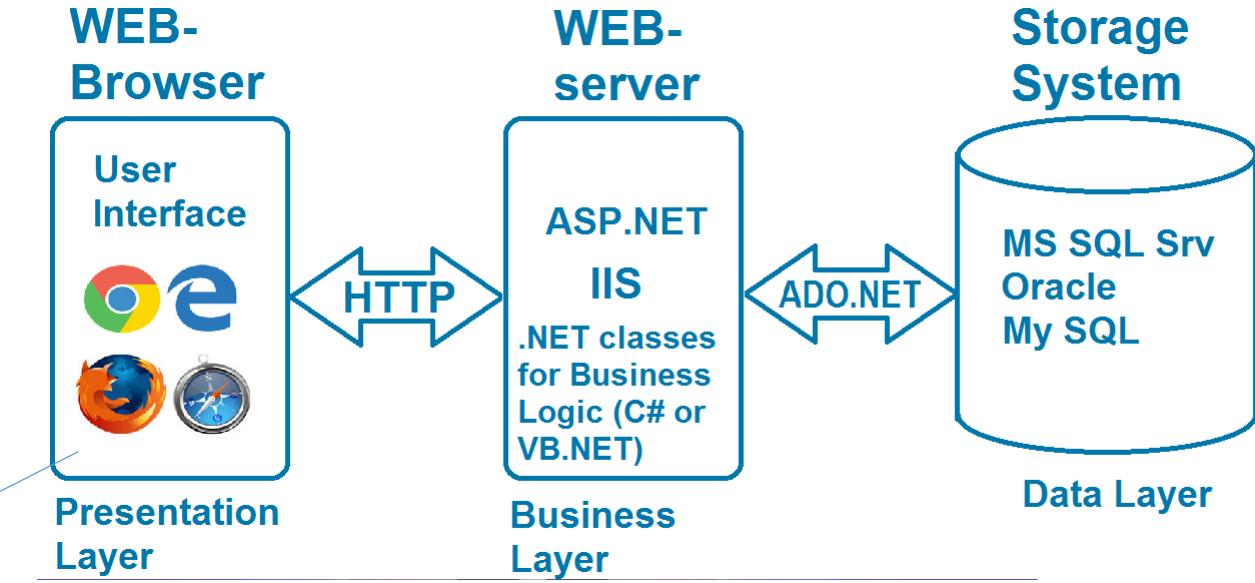
**Storage
System**

MS SQL Srv
Oracle
My SQL

Data Layer

At the **interface level** are studied :

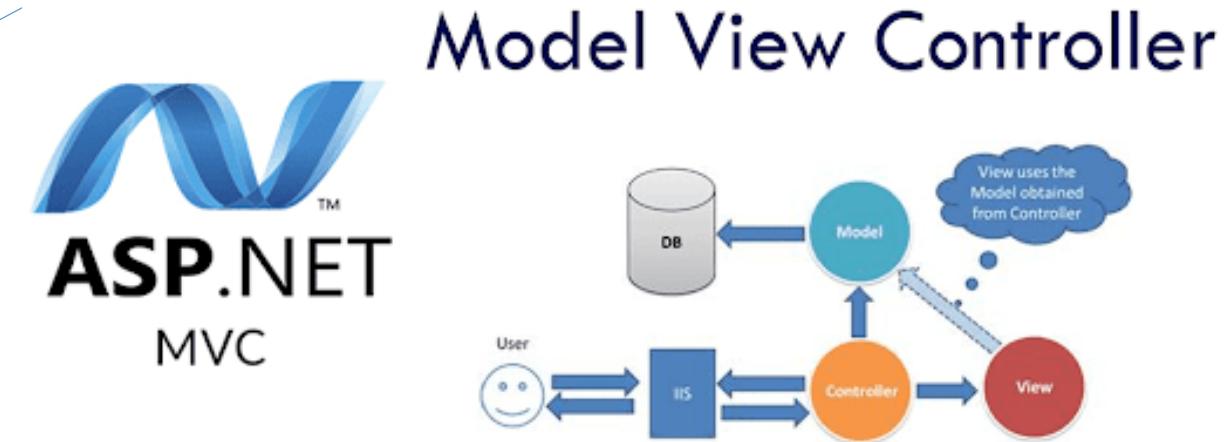
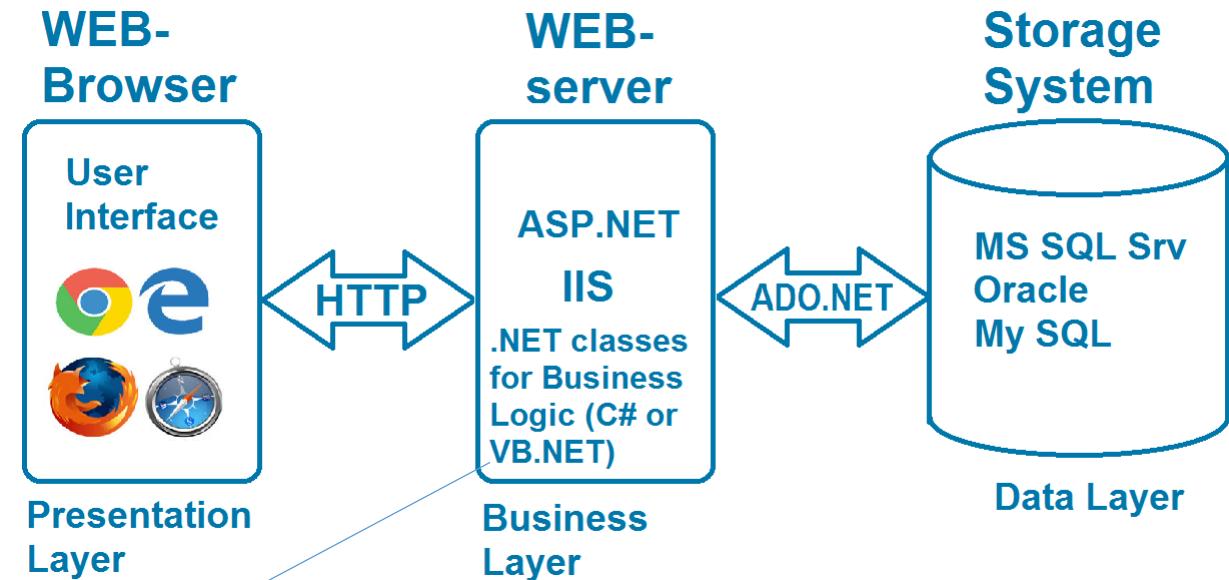
- HTML/CSS/ JavaScript
- Document object Model (DOM)
- Single page applications (**Angular JS** and (or) **Vue.JS** frameworks)



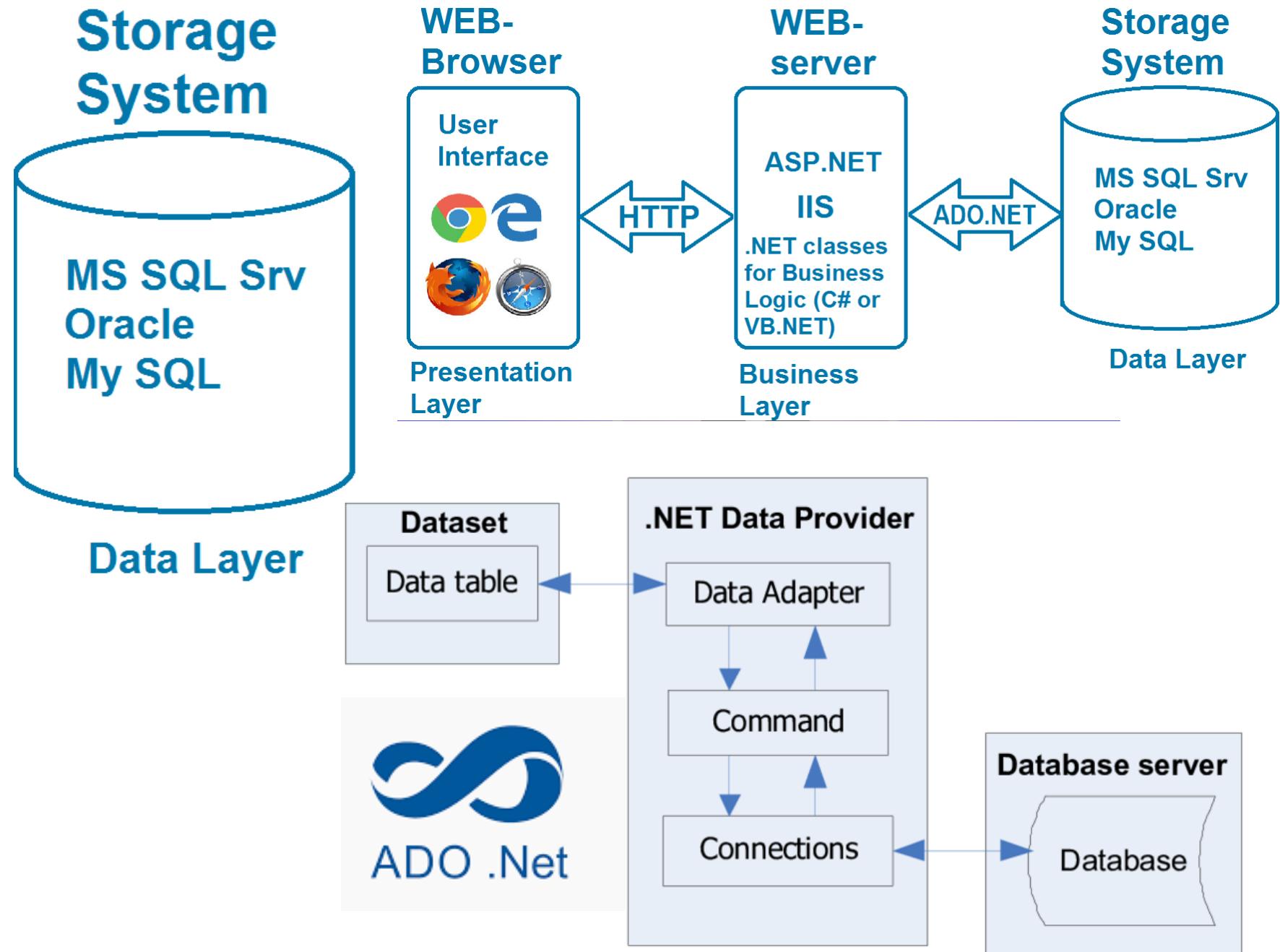
At the
server level
(Business
Layer)

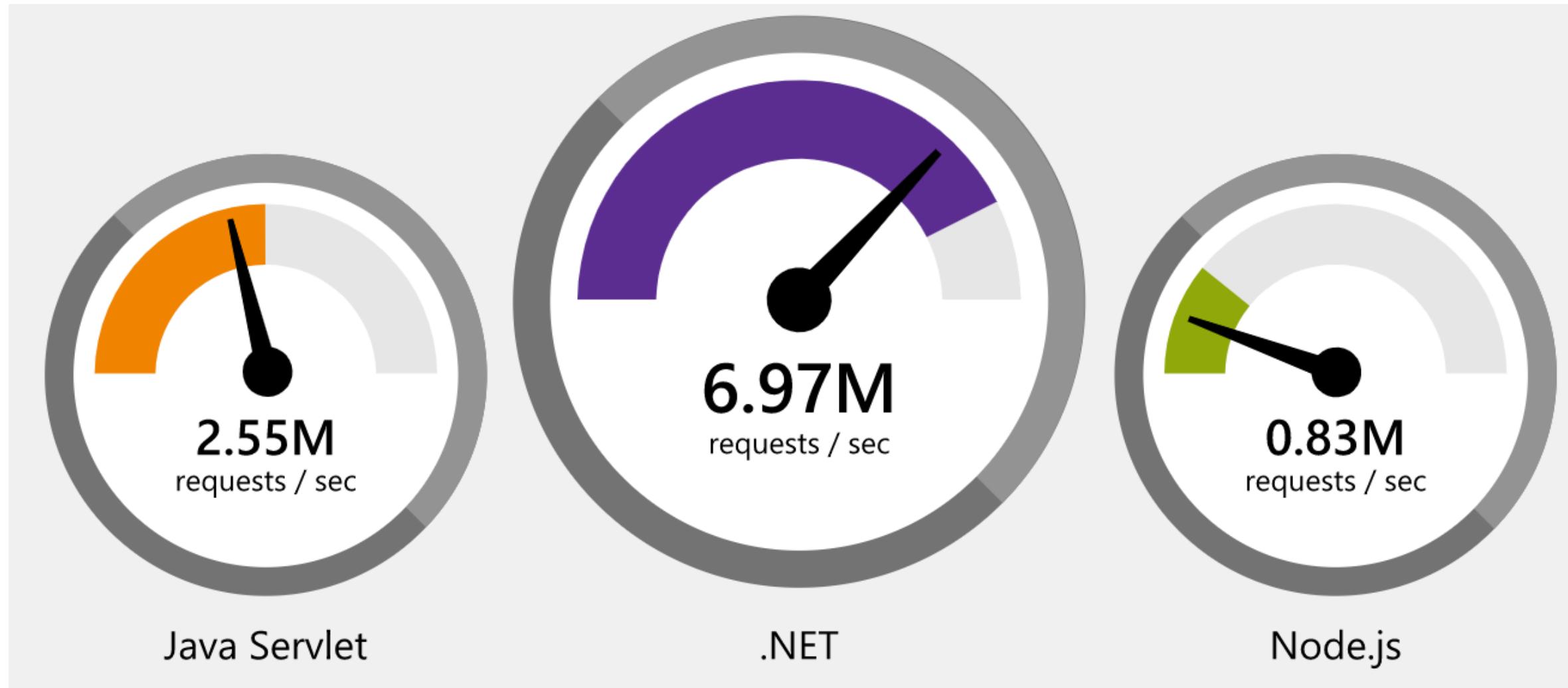
is studied

- The **ASP.NET** technology based on **C#** and **VB.NET**
- Model View Controller



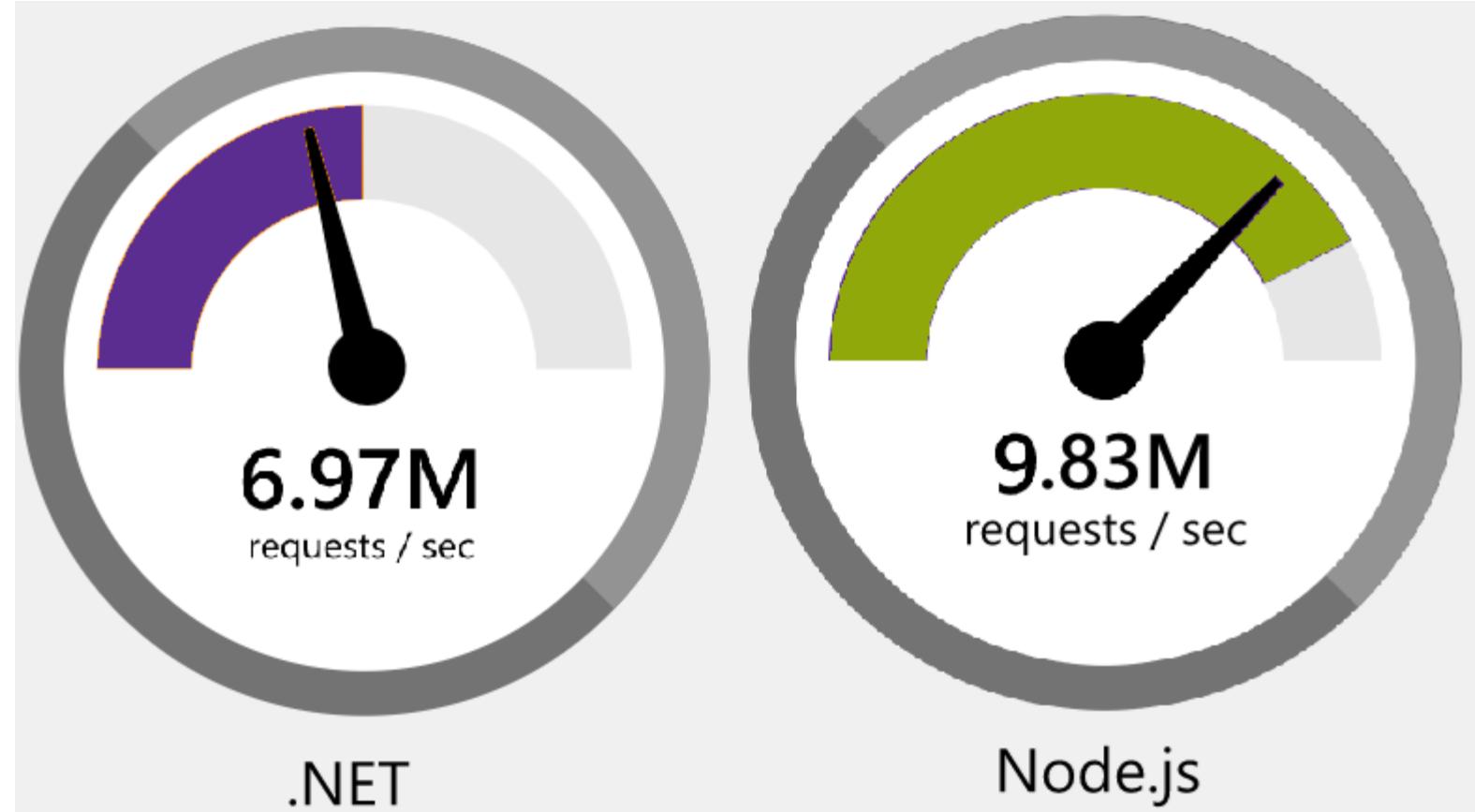
At the data level (Data Layer) is studied the ADO.NET technology for inter-operating with databases





Such a selection is conditioned by the fact that today ASP.NET performs faster than any popular WEB framework.

If the situation
changes in a
year or two
and
Node.js
outperforms
ASP.NET
in speed or
popularity

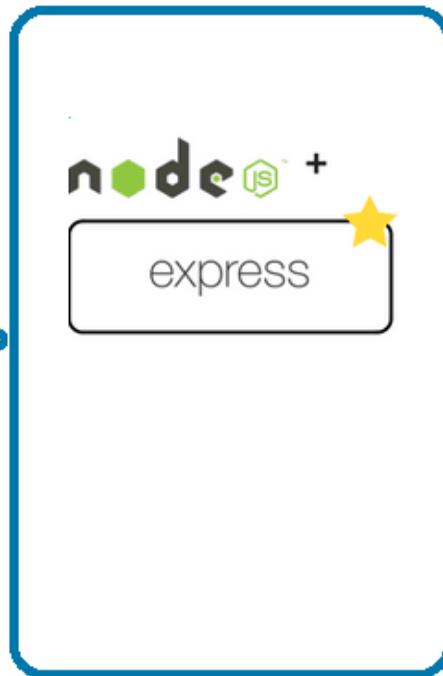


WEB- Browser



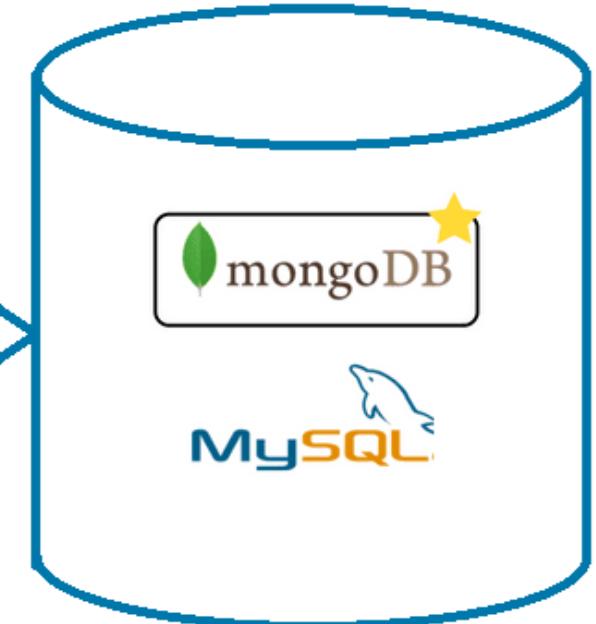
**Presentation
Layer**

WEB- server



**Business
Layer**

Storage System



Data Layer

Then we will possibly learn Node.js at the server level.

WEB- Browser



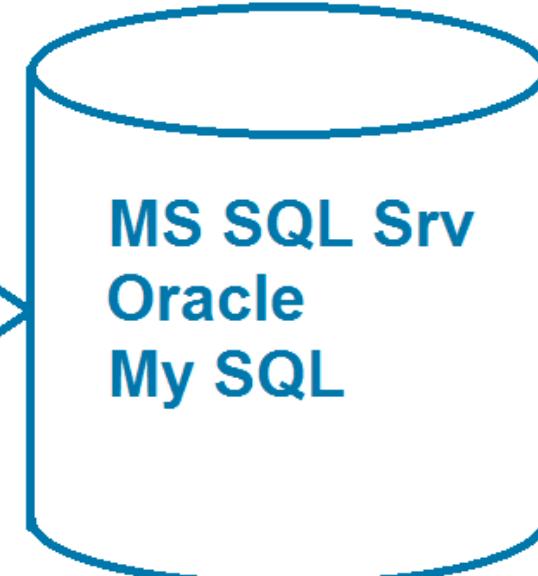
**Presentation
Layer**

WEB- server



**Business
Layer**

Storage System

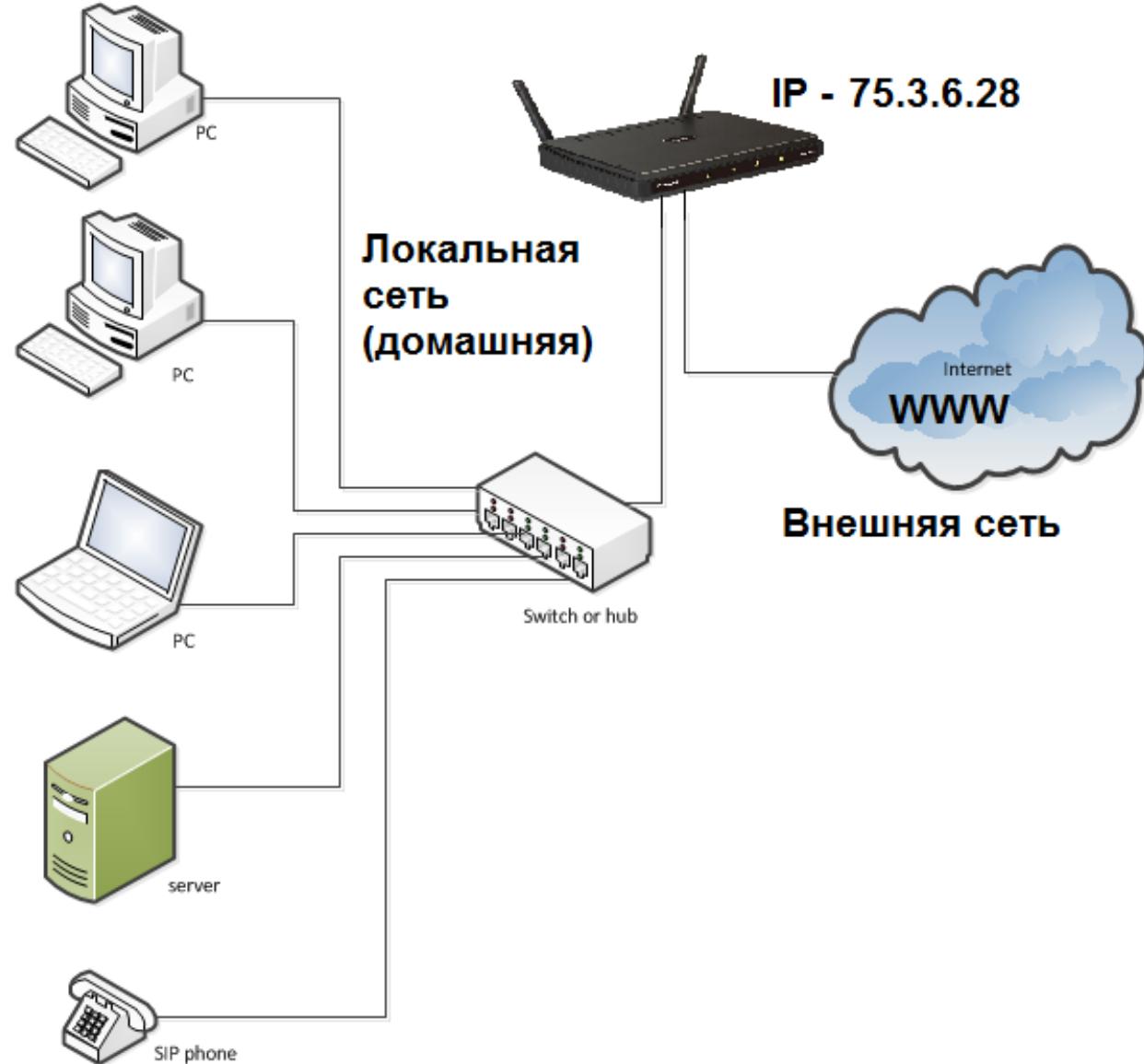


Data Layer

But in the meantime we present you the thing which we find the best and the most useful for students for today.

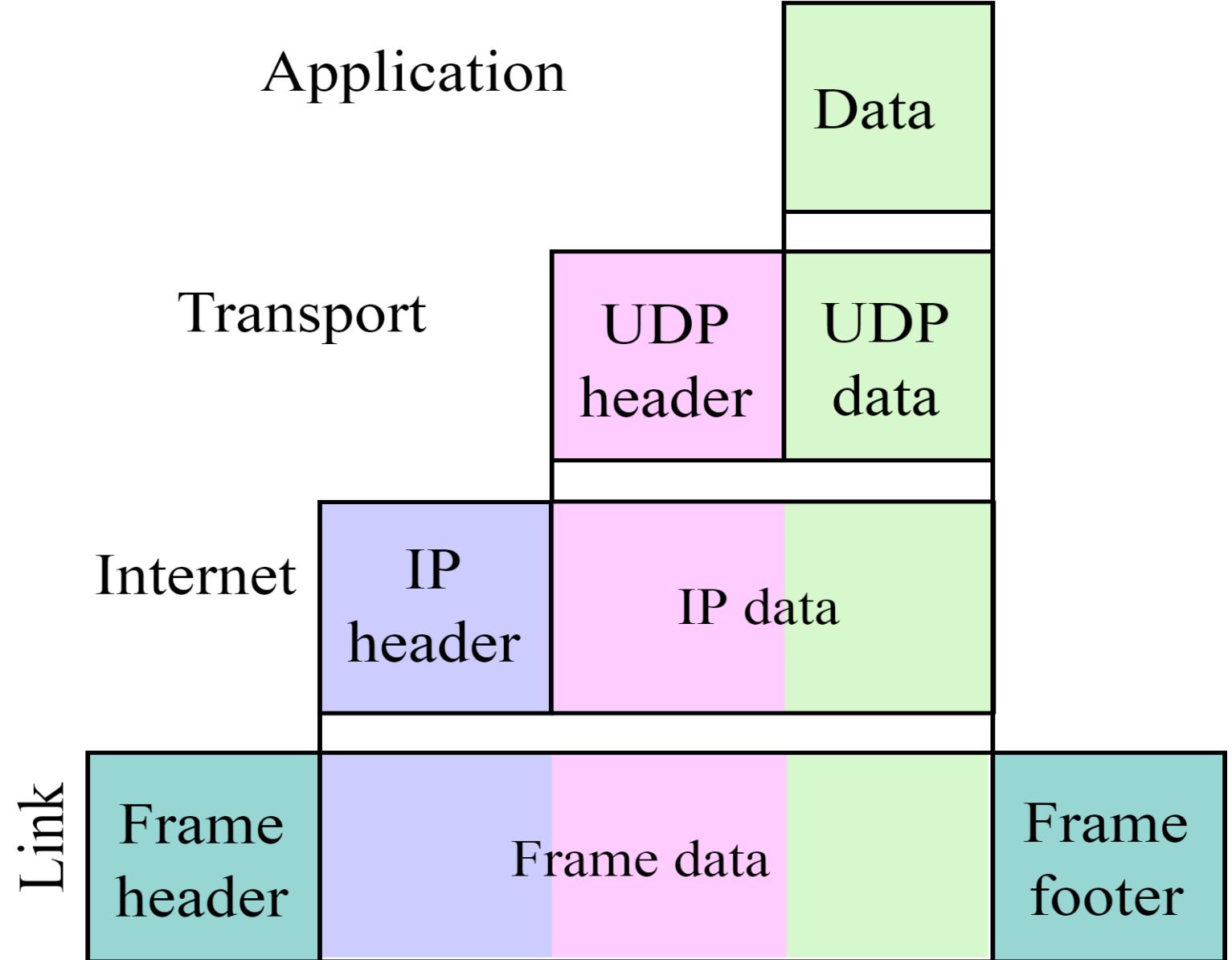
DHCP

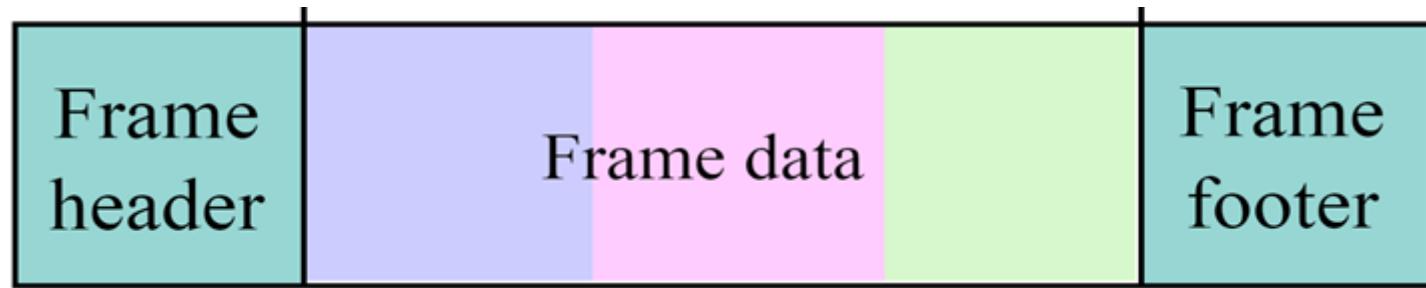
- DHCP
(Dynamic
Host
Configura
tion
Protocol)



TCP/IP

TCP/IP -
set of
standards
and rules
defining
how data is
transmitted
by network.





172 . 16 . 254 . 1



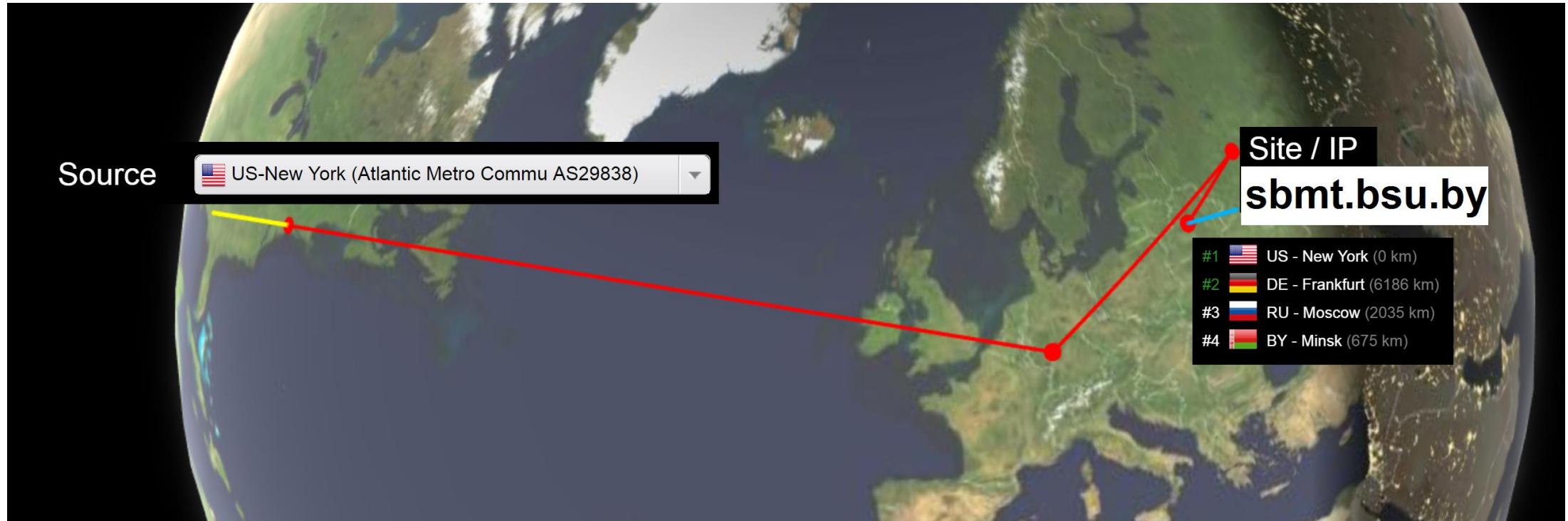
10101100.00010000.11111110.00000001

8 bits

32 bits (4 bytes)

<https://asp.net.by/EN/Error in film.mp4>





Animated map reveals the 550,000 miles of cable hidden under the ocean that power the internet

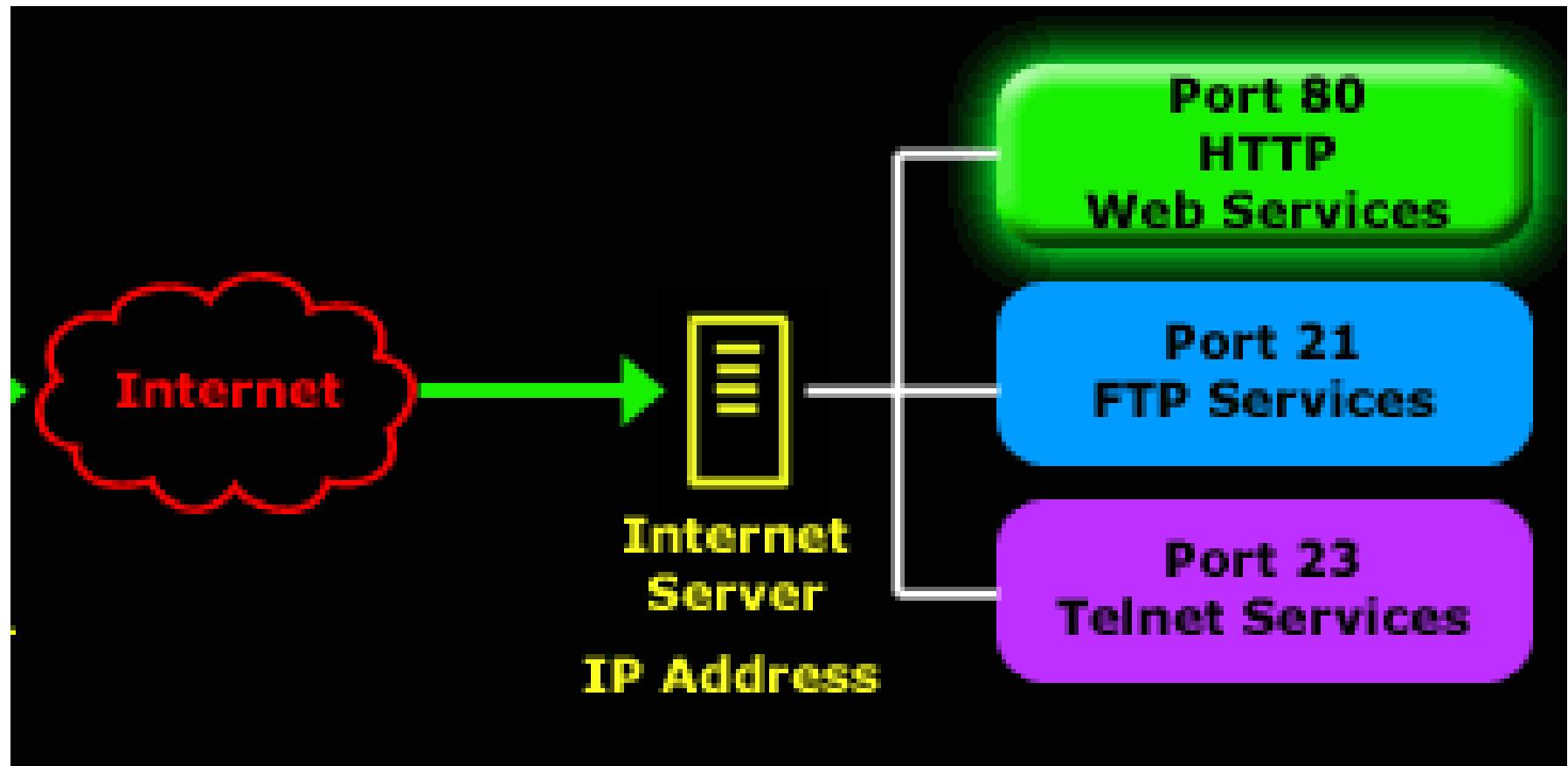
<https://www.youtube.com/watch?v=DKHZKTRyzeg>

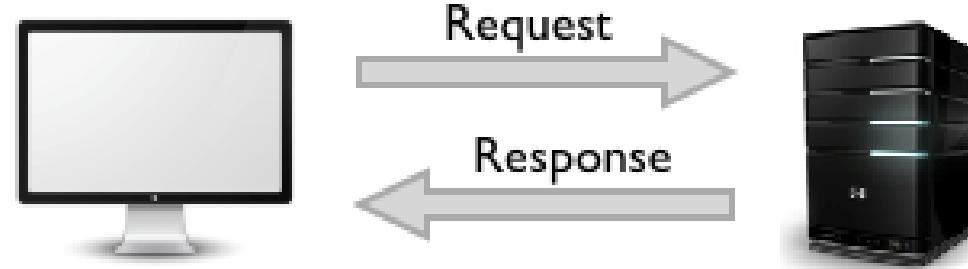
Inside the Extreme Life of Divers Repairing Billion \$ Underwater Cables

<https://www.youtube.com/watch?v=l1knCR6xAzo>

Ports

- HTTP port **80**,
- HTTPS — port **443**.
- FTP — port **21**.
- SMTP — port **25**
- SMTP — port **23**





HTTP request structure

Method URL Protocol version
 ↓ ↓ ↓
 GET/ index.htm HTTP/1.1
 Host: www.site.com
 User-Agent: Opera
 Accept: text/html, */*
 Accept-Language: en-us
 Accept: ISO-8859-1, utf-8
 Connection: keep-alive

Header
 Body (optional)

Empty line

HTTP response structure

Version Status Message status
 ↓ ↓ ↓
 HTTP/1.1 200 OK
 Date: Sun, 21 Jul 2019
 23:17 GMT
 Server: IIS /6.0
 Content-Type: text/html;
 charset=UTF-8
 Content-Length: 7686

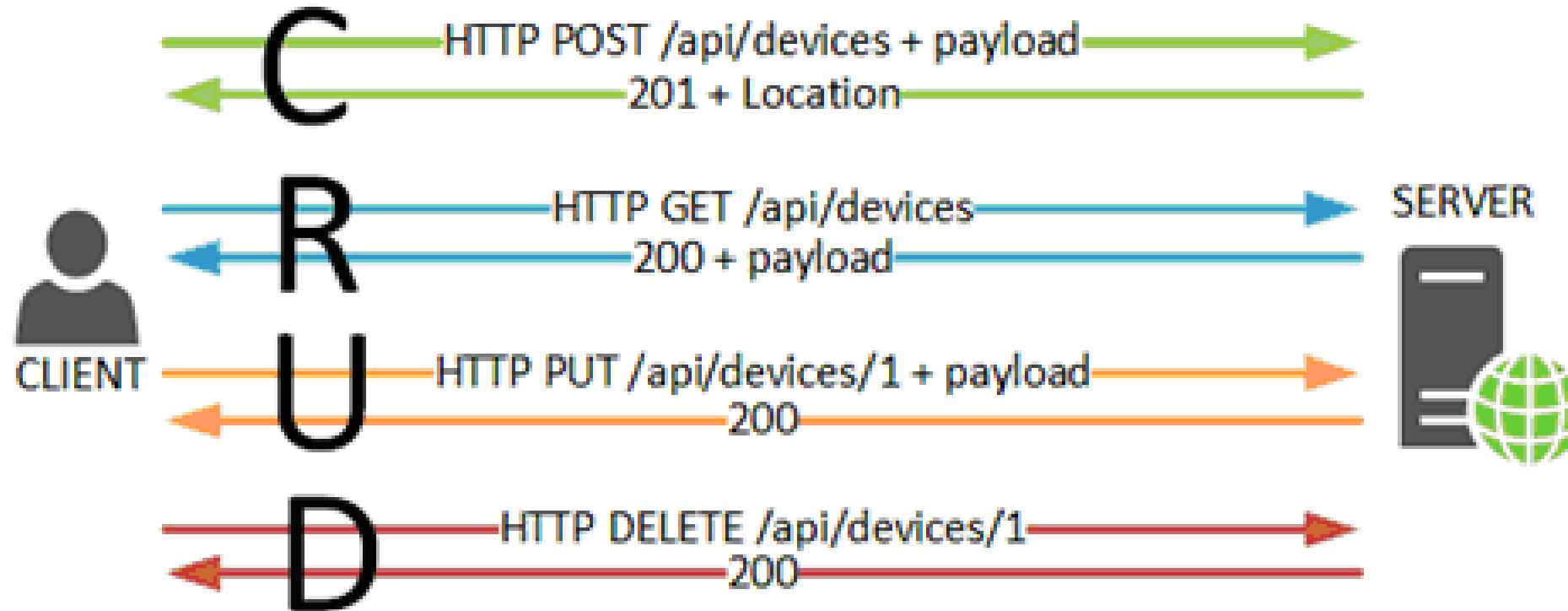
Header
 Blank line

Body
 <html>

 </html>

Status codes

- **1xx**: Informational Messages
- **100** continue, which means that the client is still sending the rest of the request.
- **2xx**: Success Messages
- **200** OK
 - If the client received the code from the 2xx series, then the request was successful..
- **3xx**: Redirection
- **301** Moved Permanently: The resource can now be found at a different URL.
- **4xx**: Client Errors
- **404** Not Found. Resource not found on server..
- **401** Unauthorized: Authentication is required to complete a request. Information is passed through the Authorization header..
- **403** Forbidden: The server did not open access to the resource.
- **5xx**: Server Errors
- **500** Internal Server Error.
- **503** Service Unavailable: this can happen if an error occurred on the server or it is overloaded.



- GET — getting a resource
- POST — resource creation

- PUT — resource update
- DELETE — deleting a resource

Methods	Request		Response	
	URL	Request body	Status	Response body
1 GET	Yes	No	Yes	Yes
2 PUT	Yes	Yes	Yes	No
3 POST	Yes	Yes	Yes	Yes
4 DELETE	Yes	No	Yes	No

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