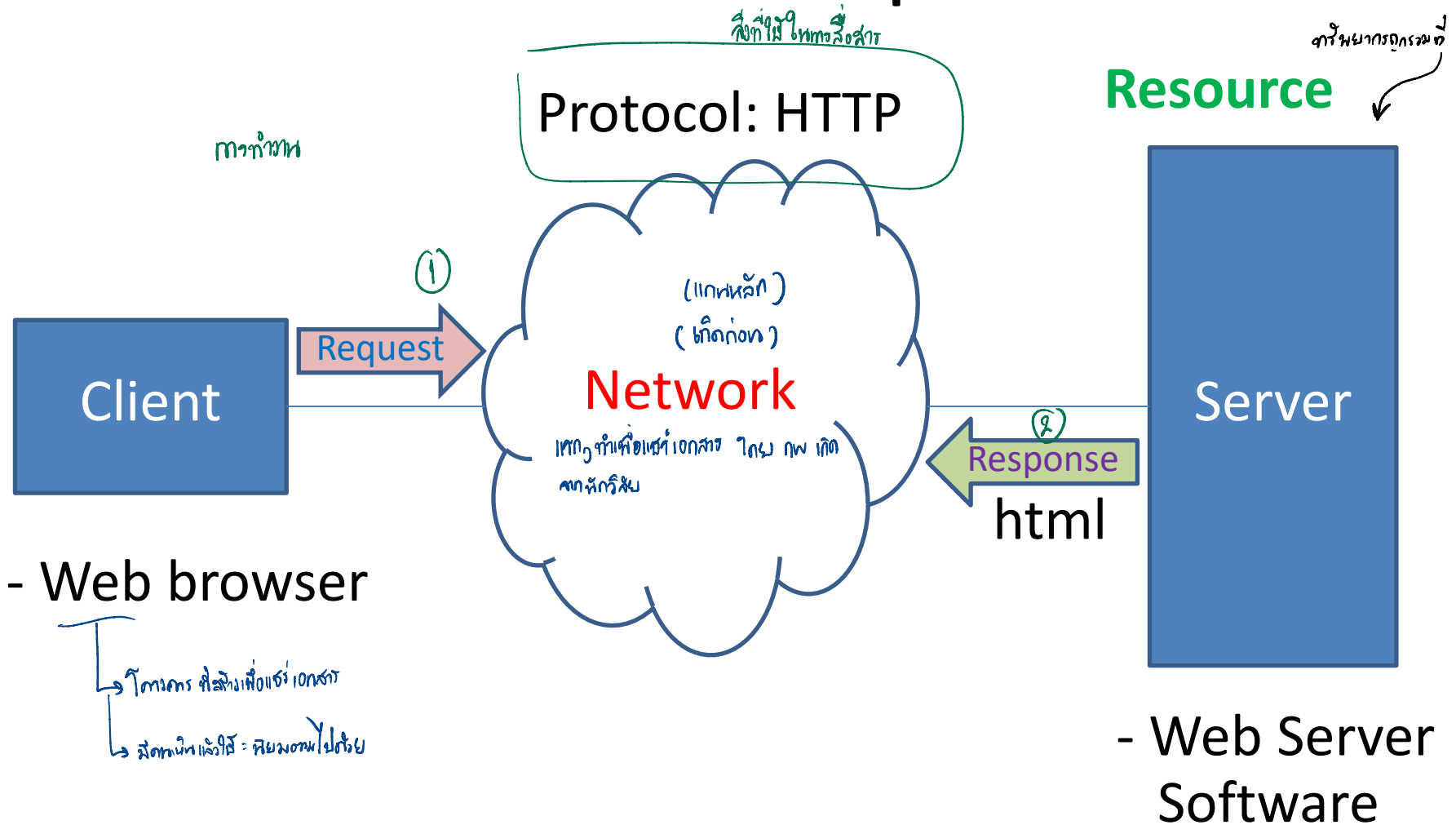


Introduction

2566

Web Concept



Hypertext Transfer Protocol

- Request – Reply protocol (RR)
- HTTP Resources are identified by URI (or URL)
- 2 types of message
 - Request message

Request line	General header	Request header	Blank line	Message body
--------------	----------------	----------------	------------	--------------

– Response message

Status line	General header	Response header	Blank line	Message body
-------------	----------------	-----------------	------------	--------------

Example of HTTP Exchange

- Request message:

GET /index.html HTTP/1.1

Host: www.example.com

[Blank Line]

} Request line
} header line

- Response message:

HTTP/1.1 200 OK → *สถานะ 200 OK มี update*

Date: Fri, 31 Dec 1999 23:59:59 GMT

Content-Type: text/html

Content-Length: 1354

[Blank Line]

<html>

...

} Status line
} Header lines

Body

HTTP Protocol

- 2 common methods
 - Get
 - Post

HTTP GET Method

URL: <http://www.kmitl.ac.th/page.html>

- Requesting resource

Method Resource Protocol Version

GET /page.html HTTP/1.1 → ภาวที่ 2

Host: www.kmitl.ac.th
User-Agent: Mozilla/5.0

...

...

...

Header

HTTP GET Method

URL: `http://www.kmitl.ac.th/q.php?id=123&name=John`

Query Param
↓
Query string

Method	Resource	Protocol Version
GET	/q.php?id=123&name=John	HTTP/1.1

Host: www.kmitl.ac.th
User-Agent: Mozilla/5.0

...

...

...

Header

HTTP POST Method

↳ ๑ ข้อได้เปรียบได้ ๑ ข้อเสีย form

```
< form action="http://www.kmitl.ac.th/inputtest.php" method="post" >
```

Username: < input type="text" name="uname" value="" size="20" maxlength="20" >

< br >

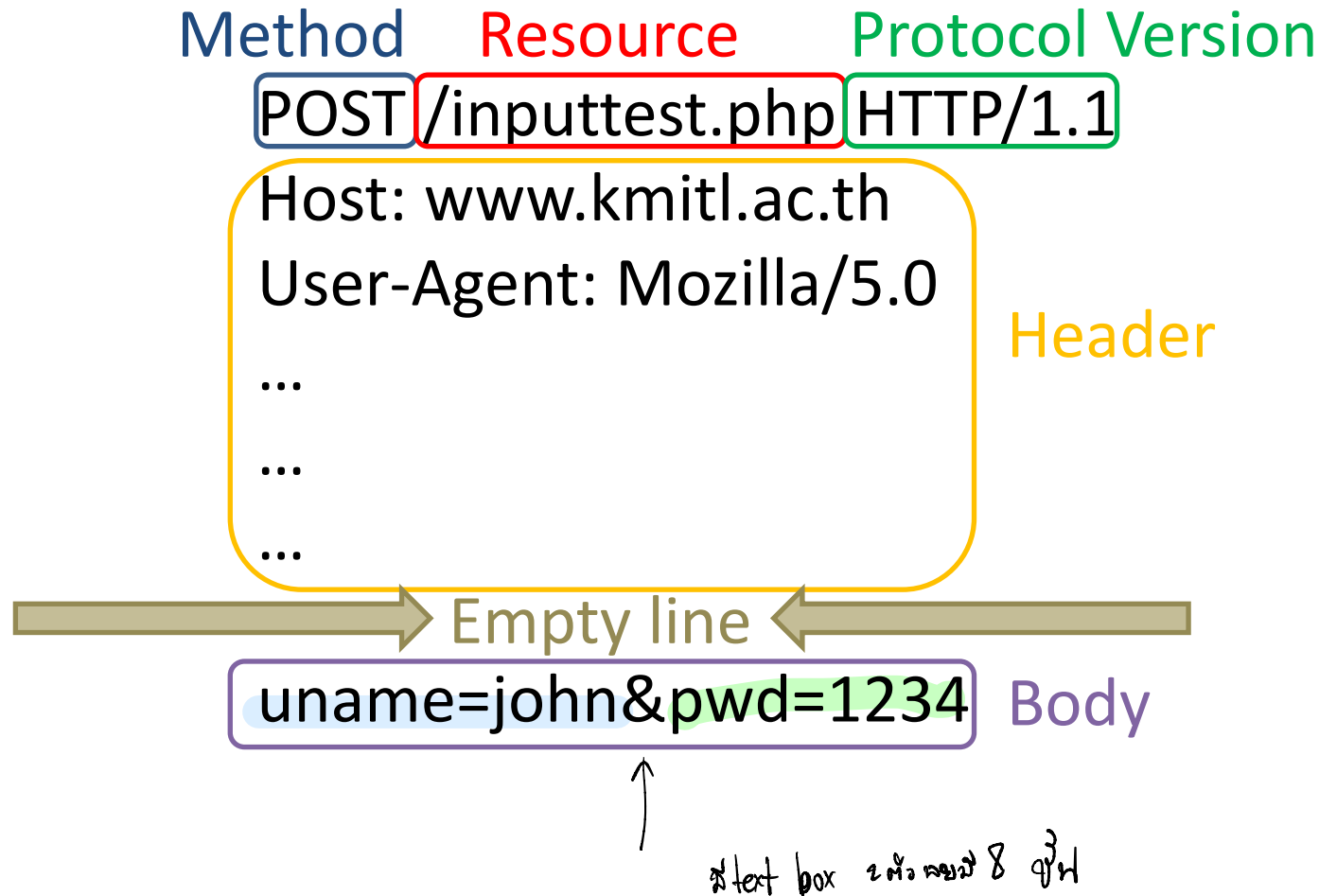
Password: < input type="password" name="pwd" value="" size="20" maxlength="20" >

```
< input type="submit" value="Submit" >
```

< /form >

The screenshot shows a web browser window with the title "Password input control - Mozilla Firefox". The browser's menu bar includes "File", "Edit", "View", "History", "Bookmarks", "Tools", and "Help". The main content area contains a form with two input fields. The first field is labeled "Username:" and contains the text "john". A blue arrow labeled "uname" points to this field. The second field is labeled "Password:" and contains the text "1234". A purple arrow labeled "pwd" points to this field. Below the password field is a "Submit" button.

HTTP POST Method



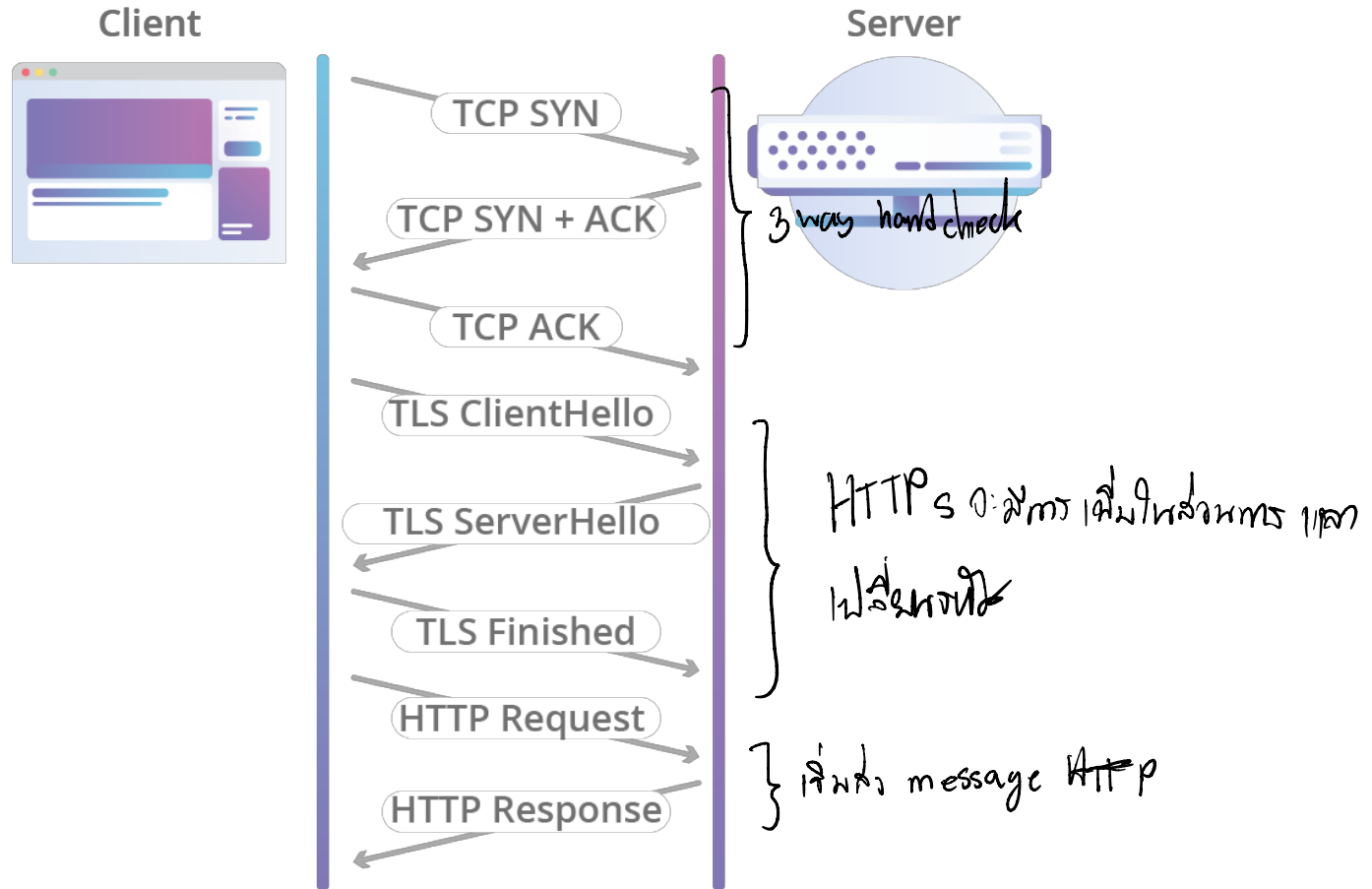
Get VS Post

	Get	Post
Data length to be sent	~4000	unlimited
Can send a chunk of data	No	Yes
Location of data in message	URL	Body
Can access CGI without using Form	Yes	No
Can retrieve file or other resource	Yes	No

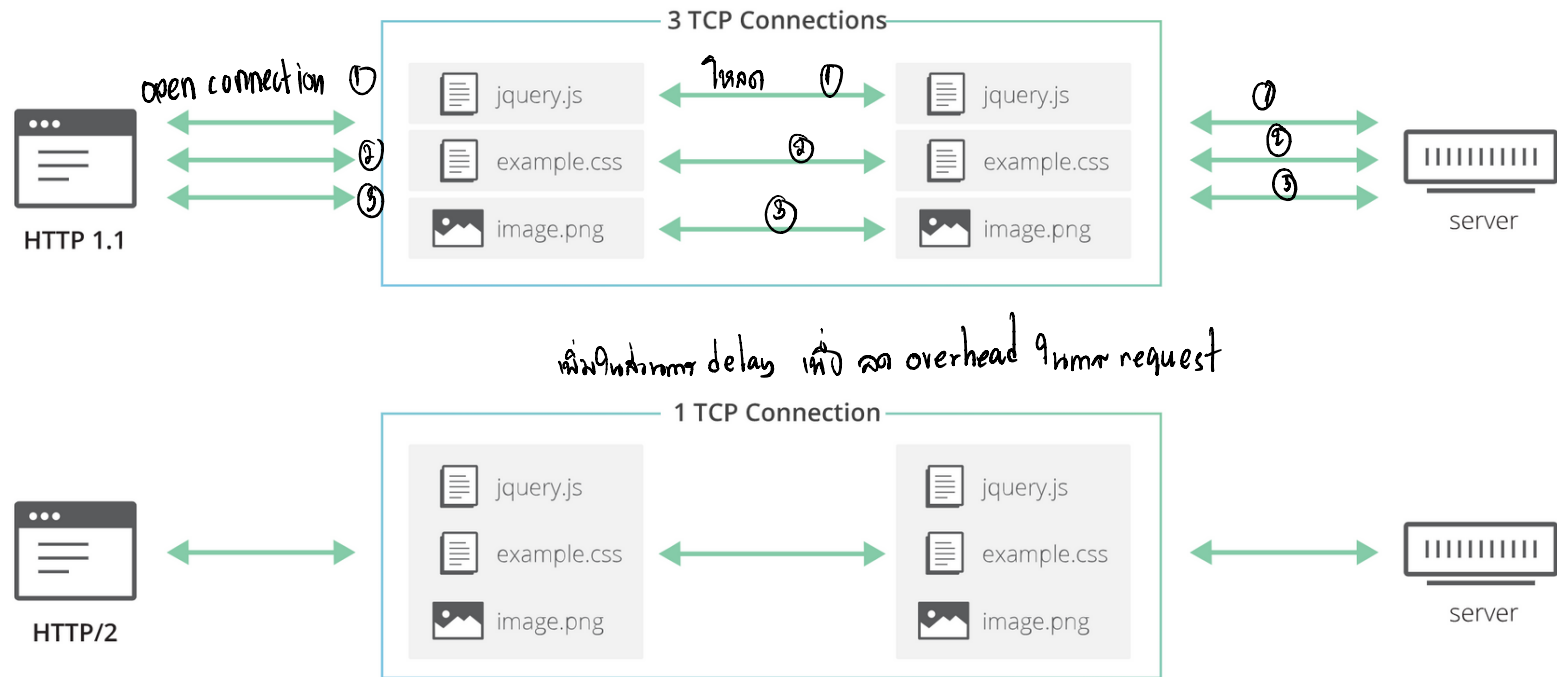
How does it work?

การทำงาน HTTP over

HTTP Request Over TCP + TLS

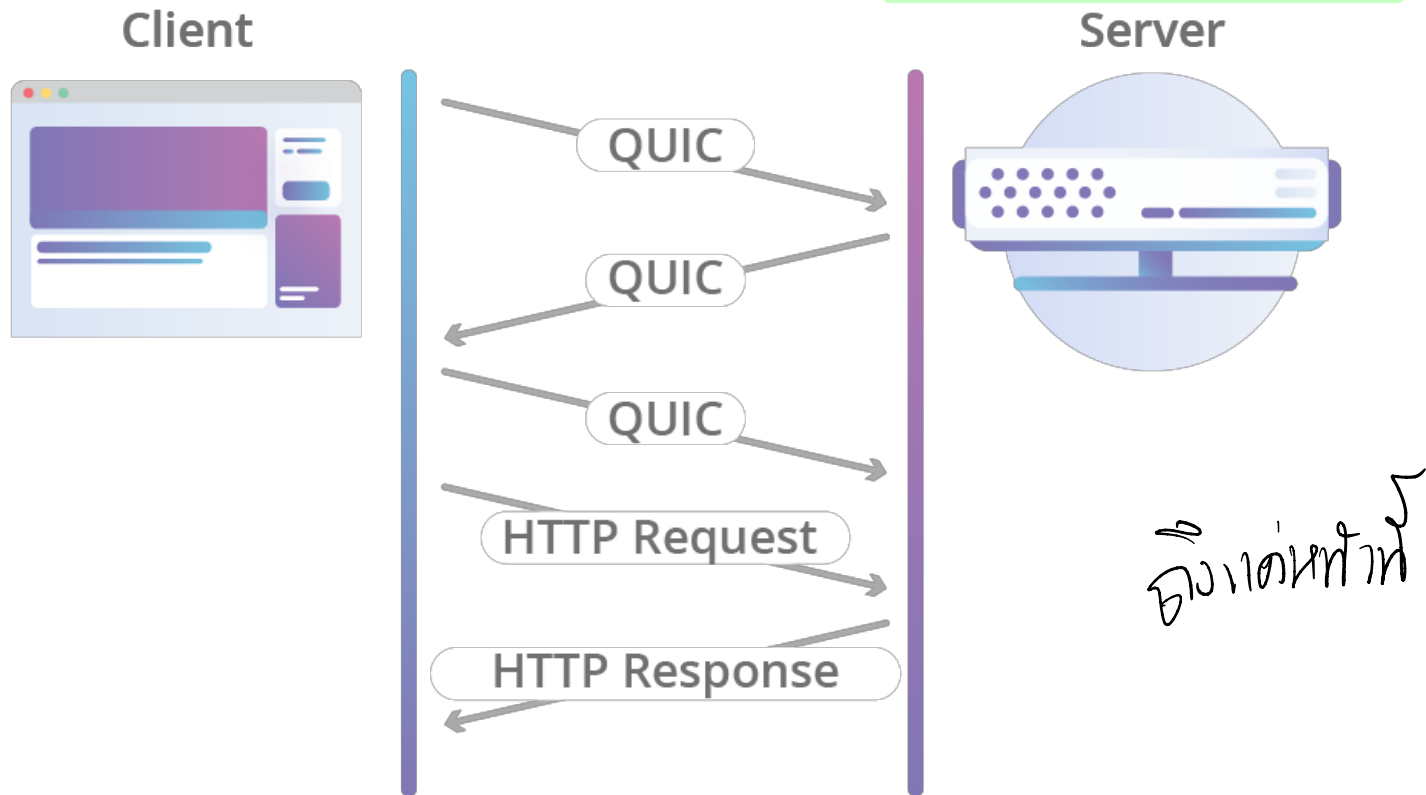


How does it work?



How does it work?

HTTP Request Over QUIC = HTTP/3



Introducing HTML and xHTML

- HTML standard is overseen by W3C
- HTML 4.01 released Dec. 1999
 - Added stricter rules to HTML 4.01 in Jan. 2000 creating what is known as xHTML
 - xHTML = Extensible Hypertext Markup Language

HTML5

- HTML5 released as a living-standard by WHATWG in 2012 and is continuously updated
 - WHATWG = Web Hypertext Application Technology Working Group
 - Formed 2004
 - Major web browser vendors are member of WHATWG
 - W3C supported WHATWG in 2006
 - Living-standard = new feature can be added but old features cannot be removed

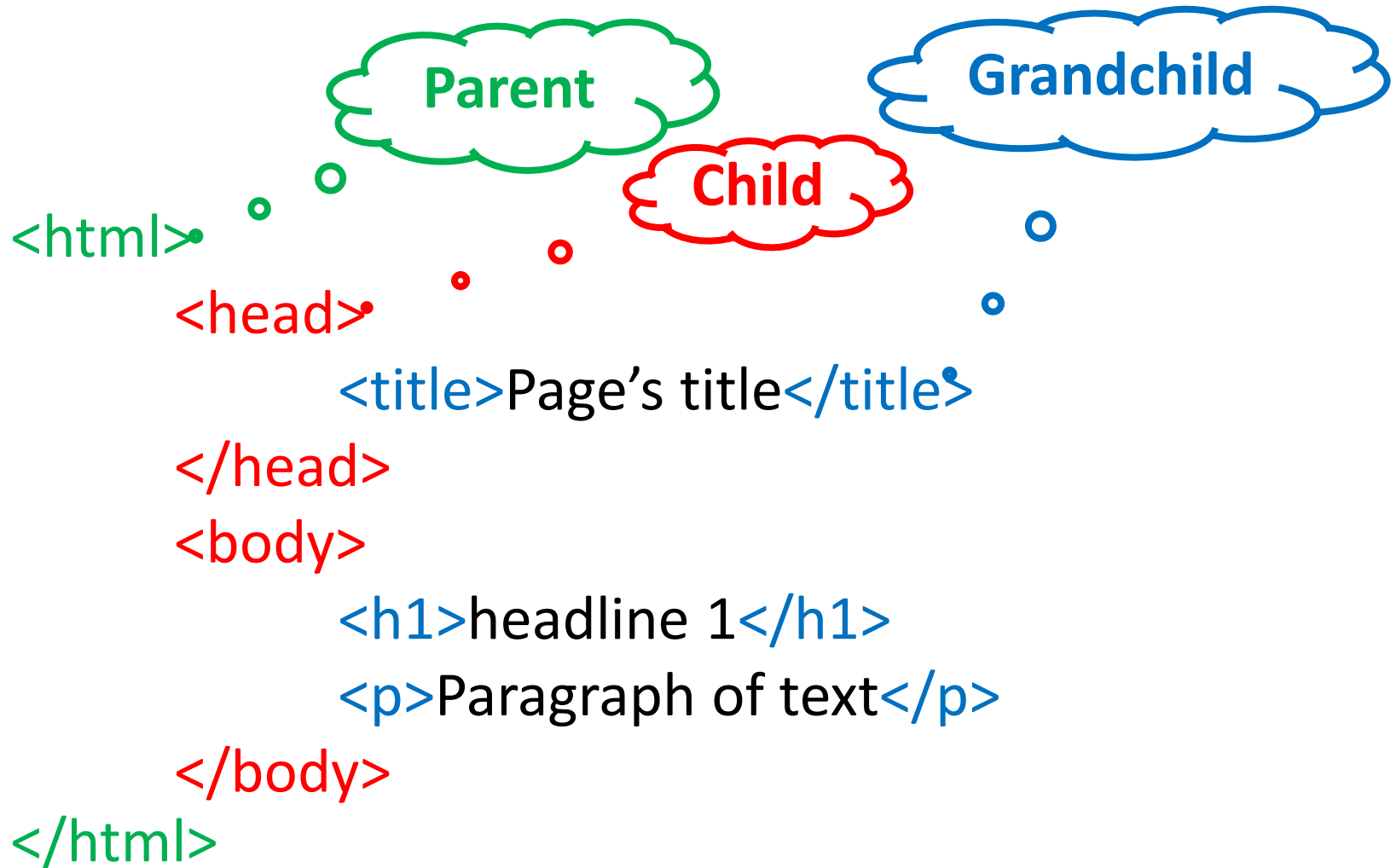
HTML5

- W3C developed a definitive HTML5
 - W3C and WHATWG decided on separation in 2012
 - W3C HTML5 released 2014
 - W3C HTML5.1 2nd edition released 2017
 - W3C HTML5.2 released 2017

Hypertext Markup Language

- Tags, Elements and Attributes
 - Tags = tokens enclosed by angle brackets - < >
 - Elements define the structure of document and lay the foundation for its presentation and manipulation, contained within one or two tags
 - Attributes = Tag modifiers compose of 2 parts: name and value
- Mostly case insensitive and not necessary to quote the value part of the attributes

- HTML example



Website

clients

Web
browser

Web
browser

Web
browser

server

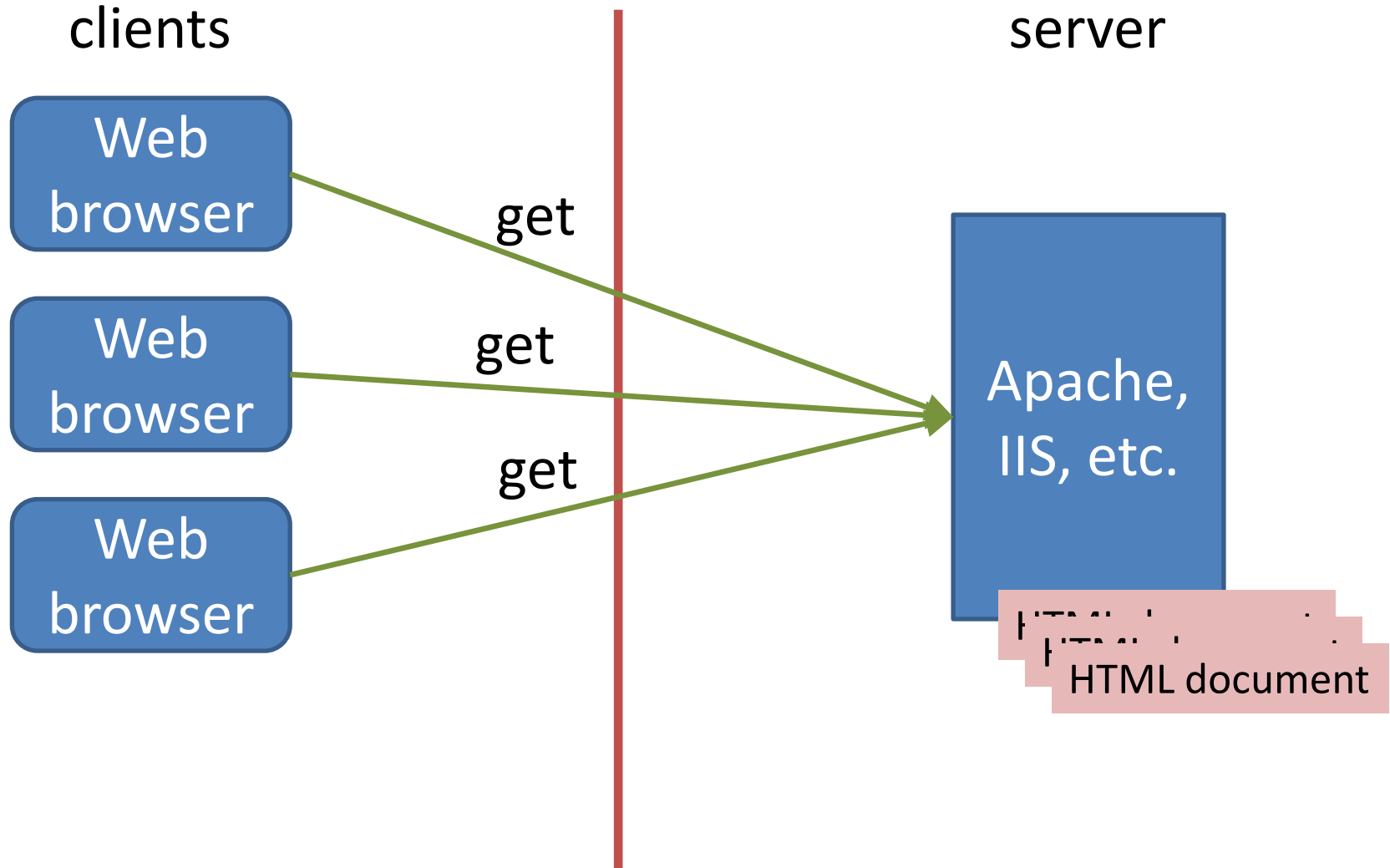
Apache,
IIS, etc.

get

get

get

HTML document



Other Web Technologies

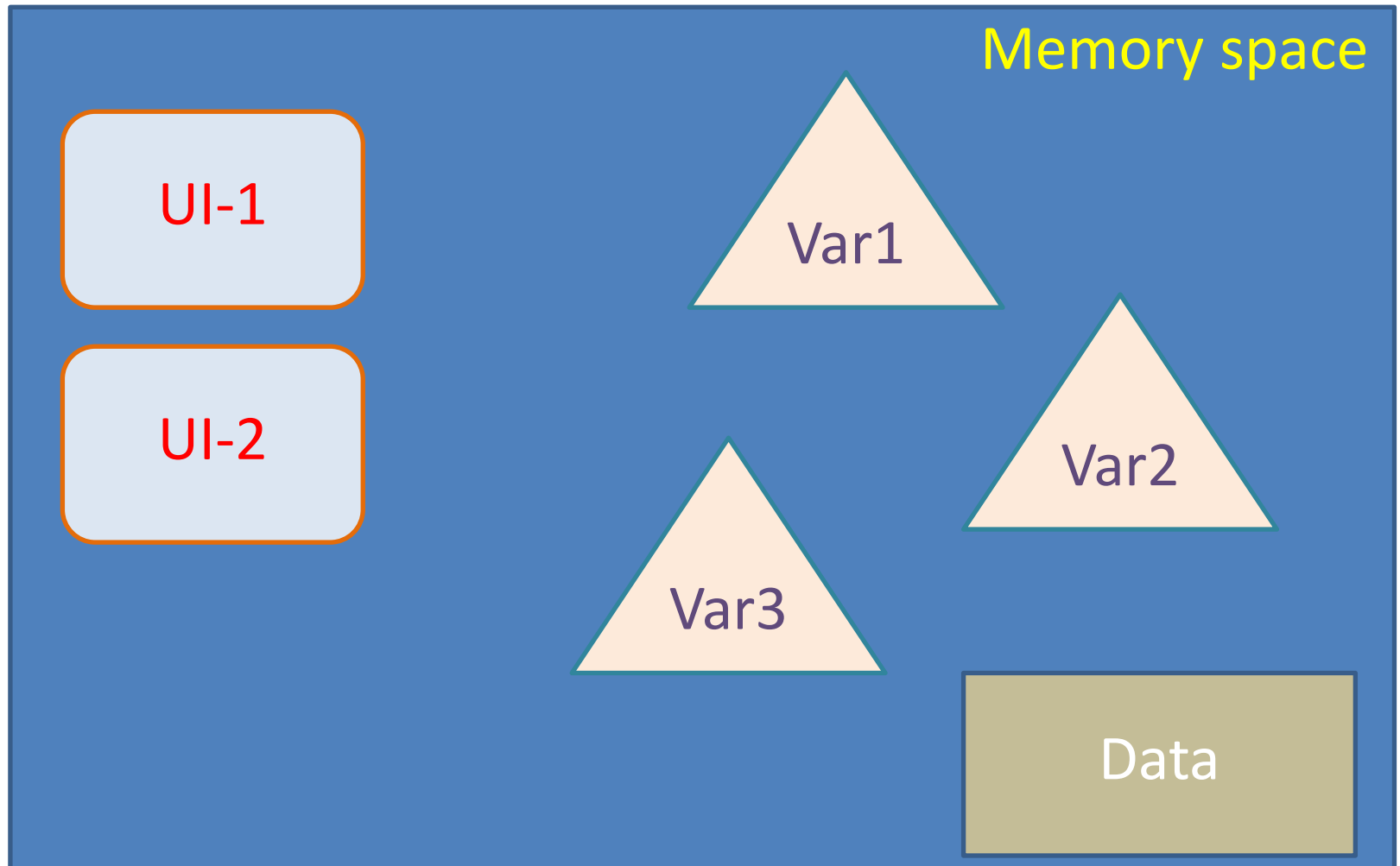
- CSS
 - Cascading Style Sheets
 - Controls visual aspects of web pages
 - Uses in conjunction with DOM
- DOM
 - Document Object Model
 - Defines the structure of html document
- ECMAScript
 - Client-side scripts
 - JavaScript is a dialect of the ECMAScript standard

Improving the Web Experience

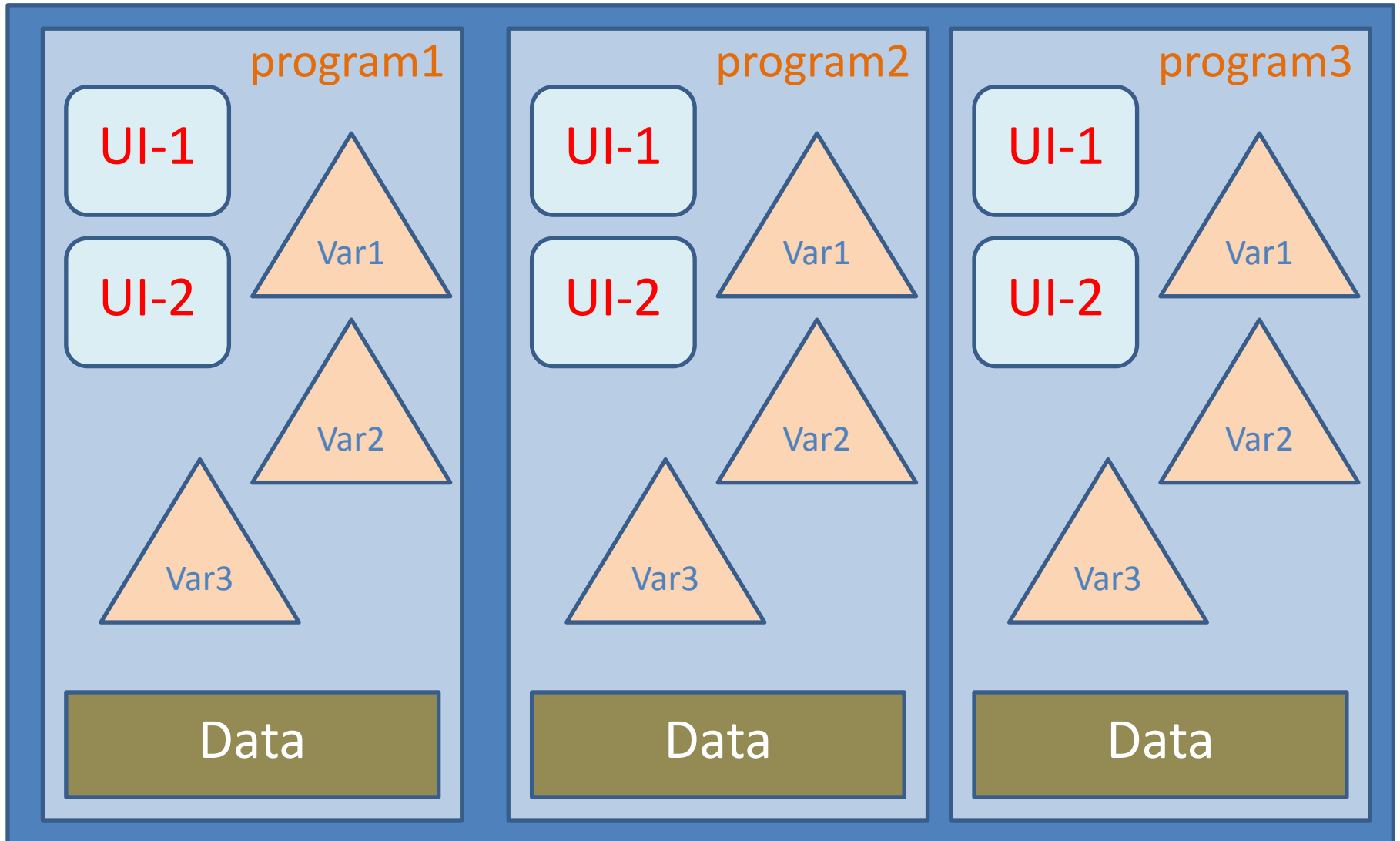
- Interaction
 - Client-side scripting
- Refreshing an entire page is not efficient
 - AJAX

Web Dev

Common Program



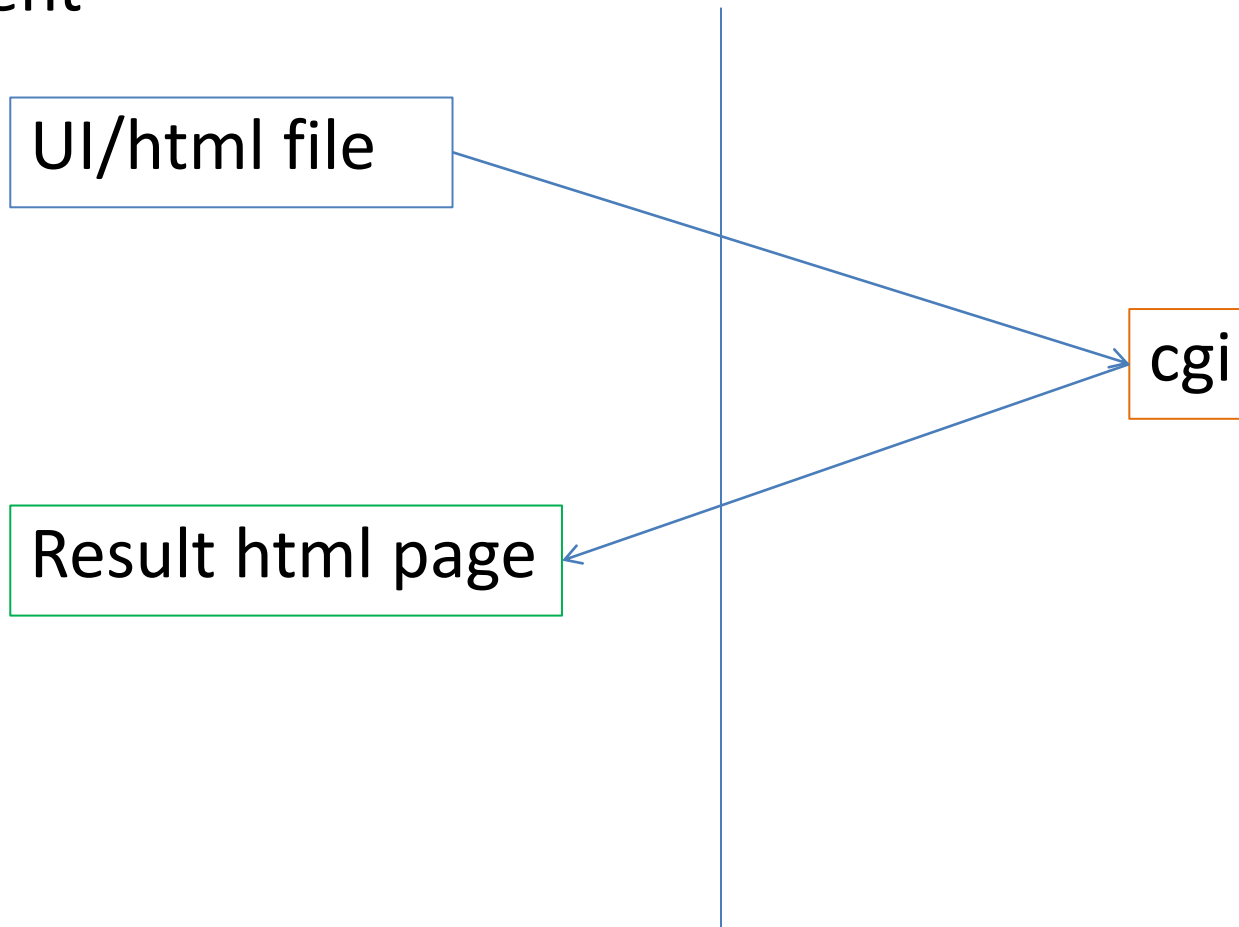
Common Program



Web programming challenge

Client

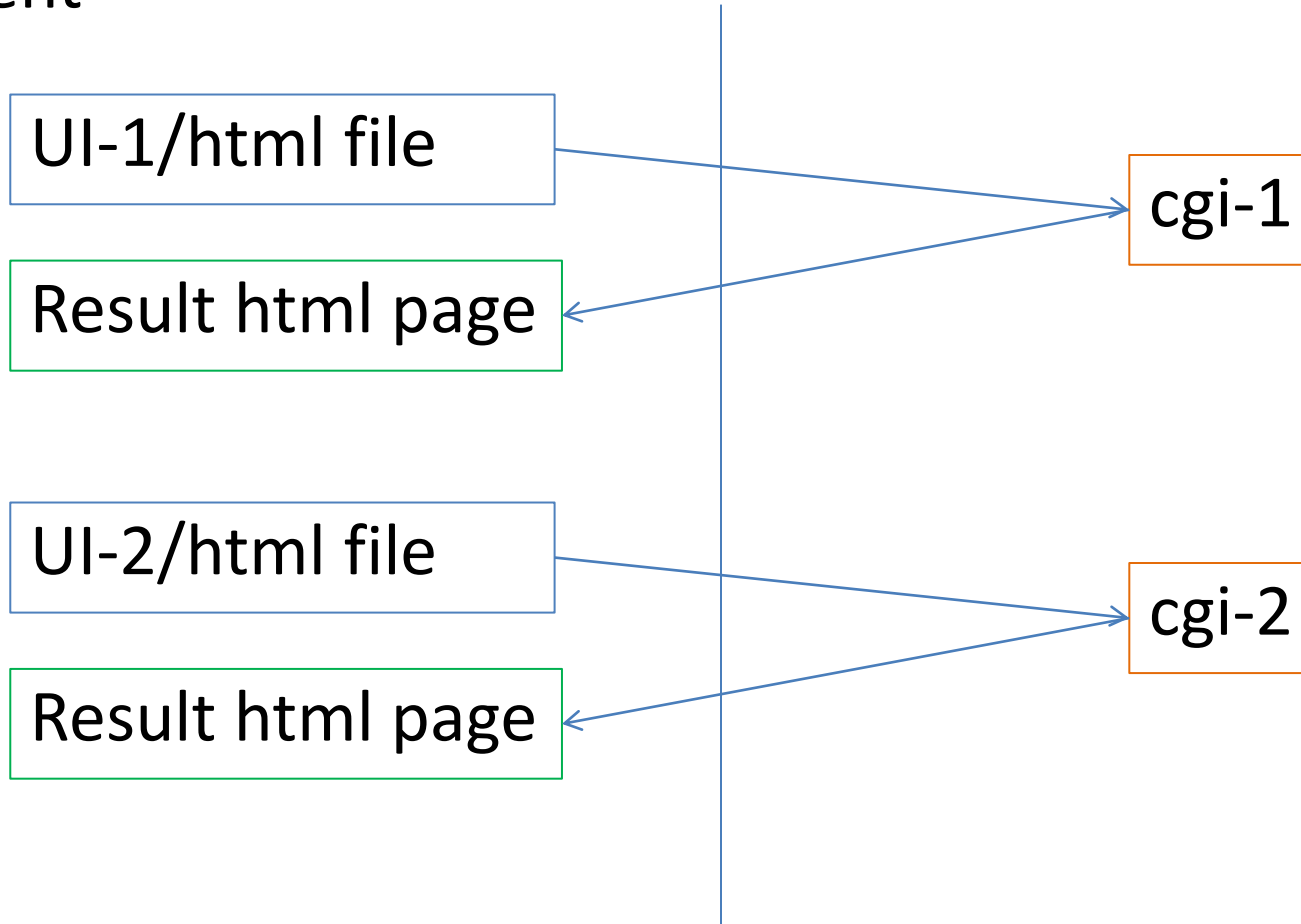
Server



Web programming challenge

Client

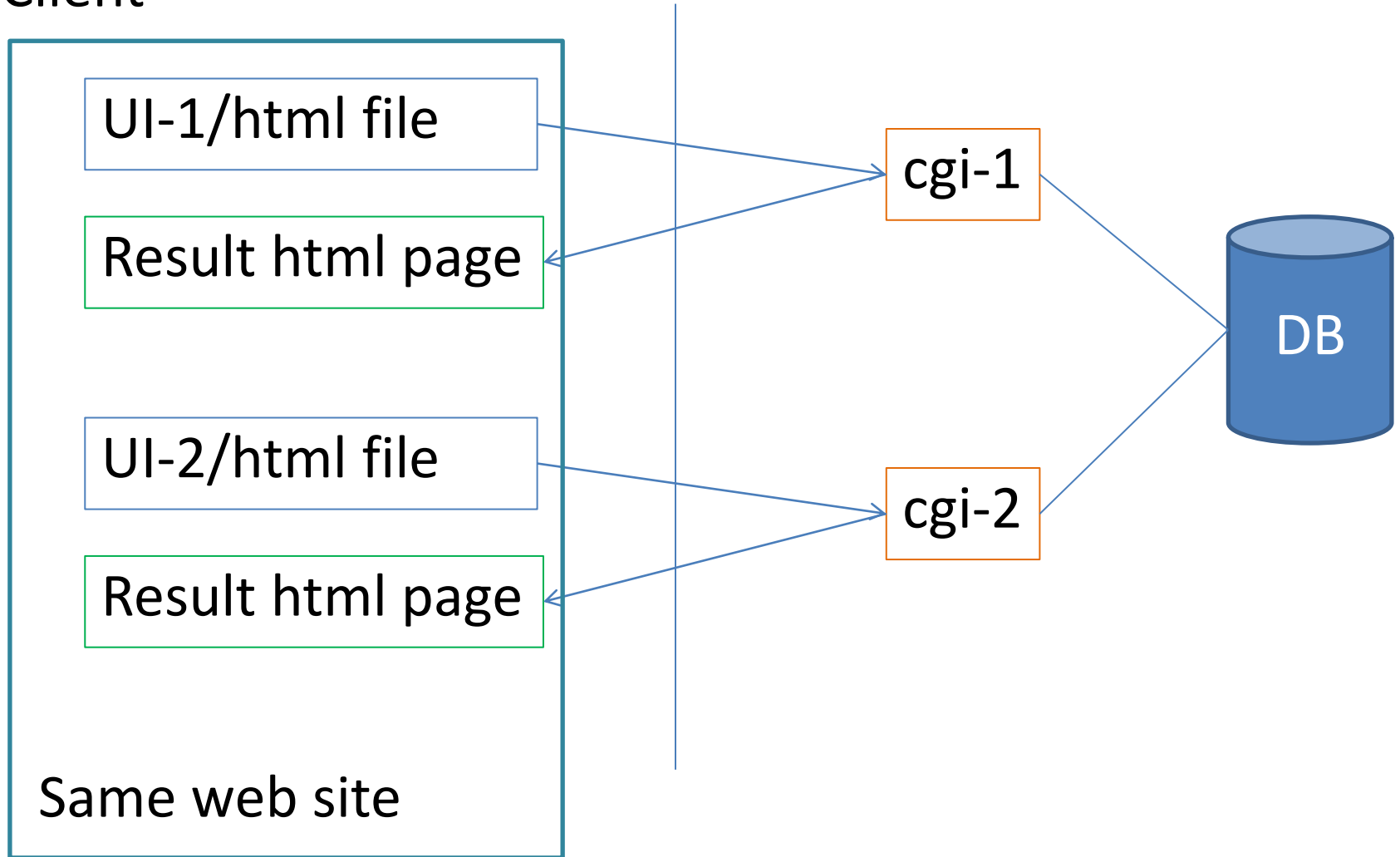
Server



Web programming challenge

Client

Server



Difficulties

Service existence

Service info.

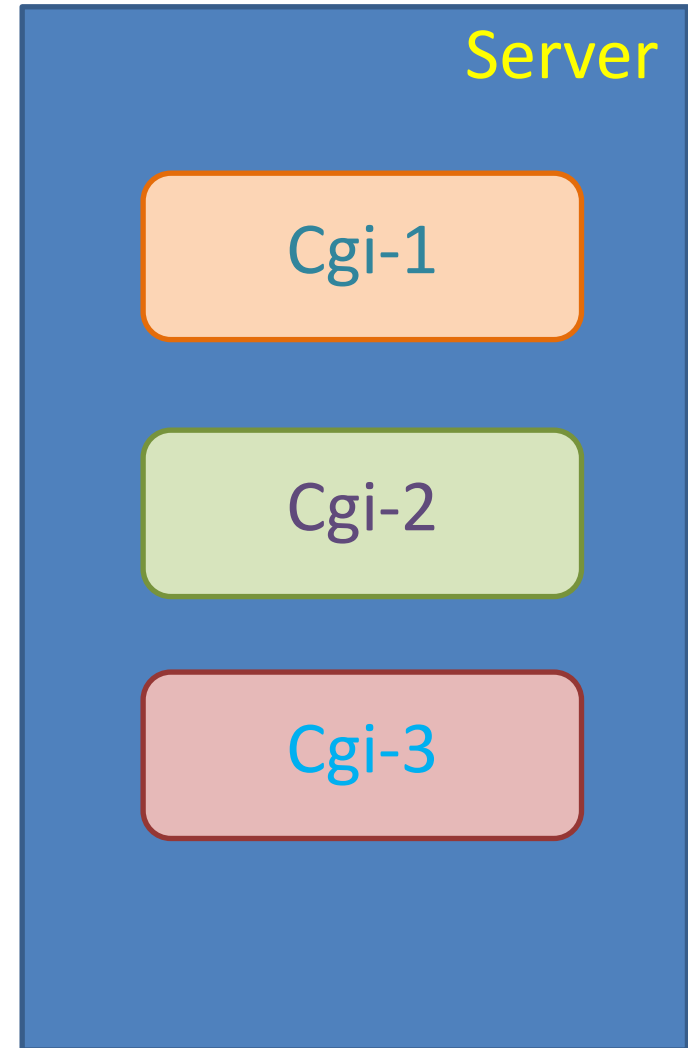
- Parameters

- Address

- Return type

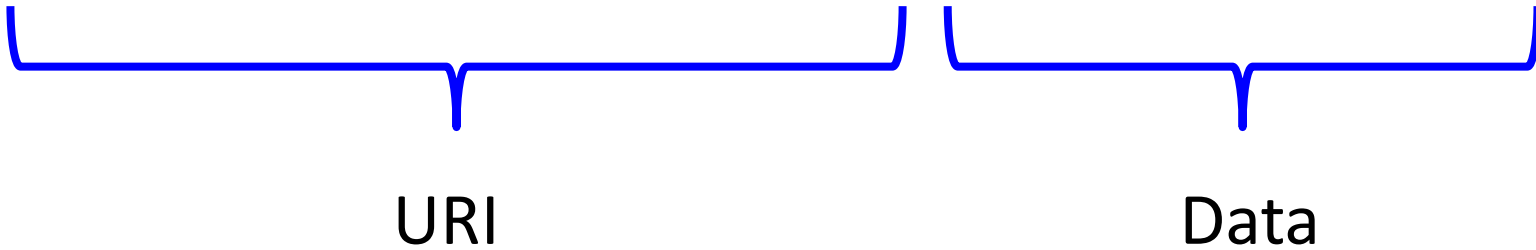
- Etc.

Data format



Example of data sending with GET

`www.sample.com/chk.cgi?fn=John&ln=Doe`



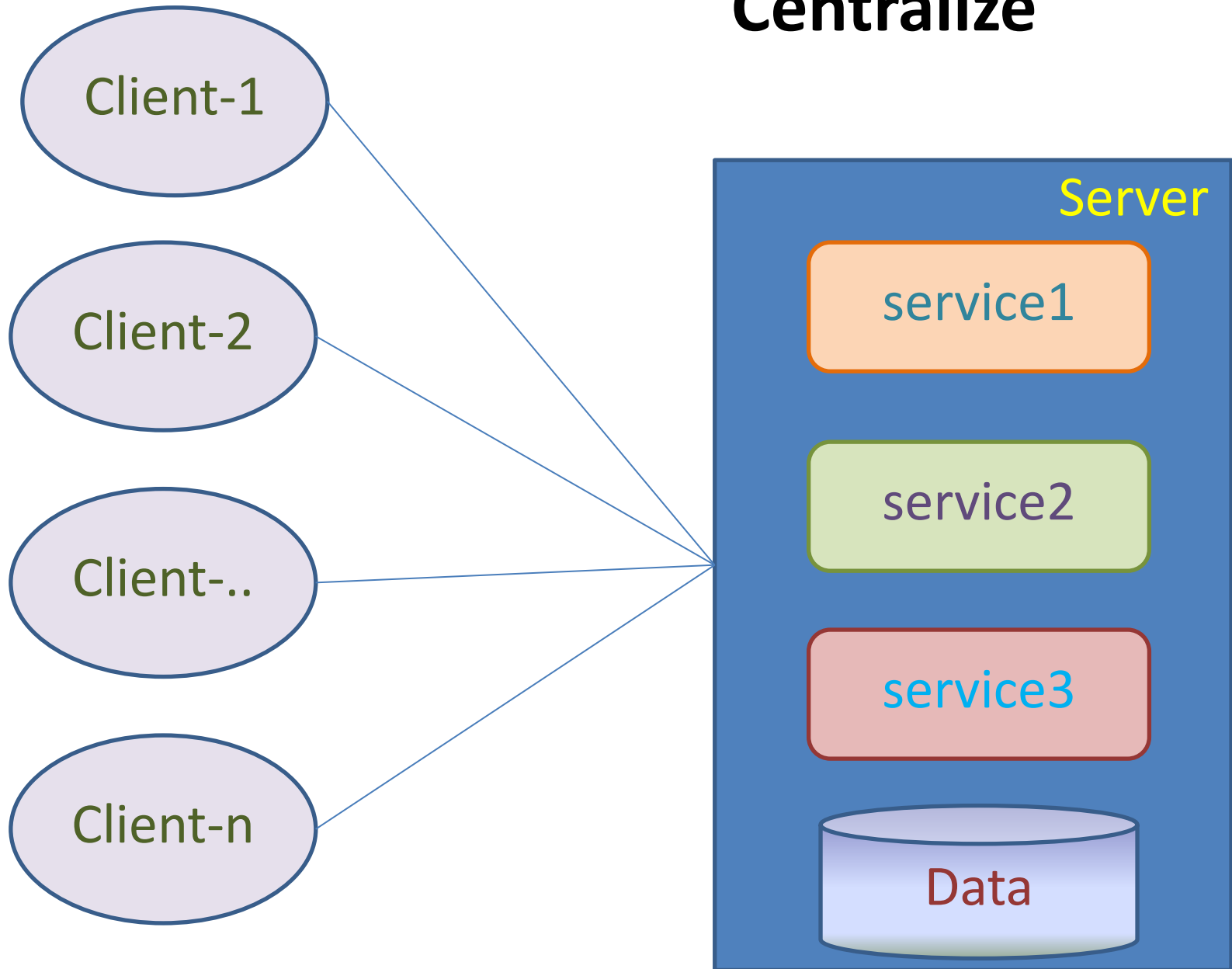
Evolution of WWW

- From User Point of View
 - Web 1.0 (1991 – 2003)
 - Static in term that user can not change any data
 - Example: www.kmitl.ac.th
 - Web 2.0 (2003 – present)
 - Users can do more than just retrieve information
 - Provide user with UIs, software, storage
 - User customizable
 - Examples: www.facebook.com, www.wikipedia.org

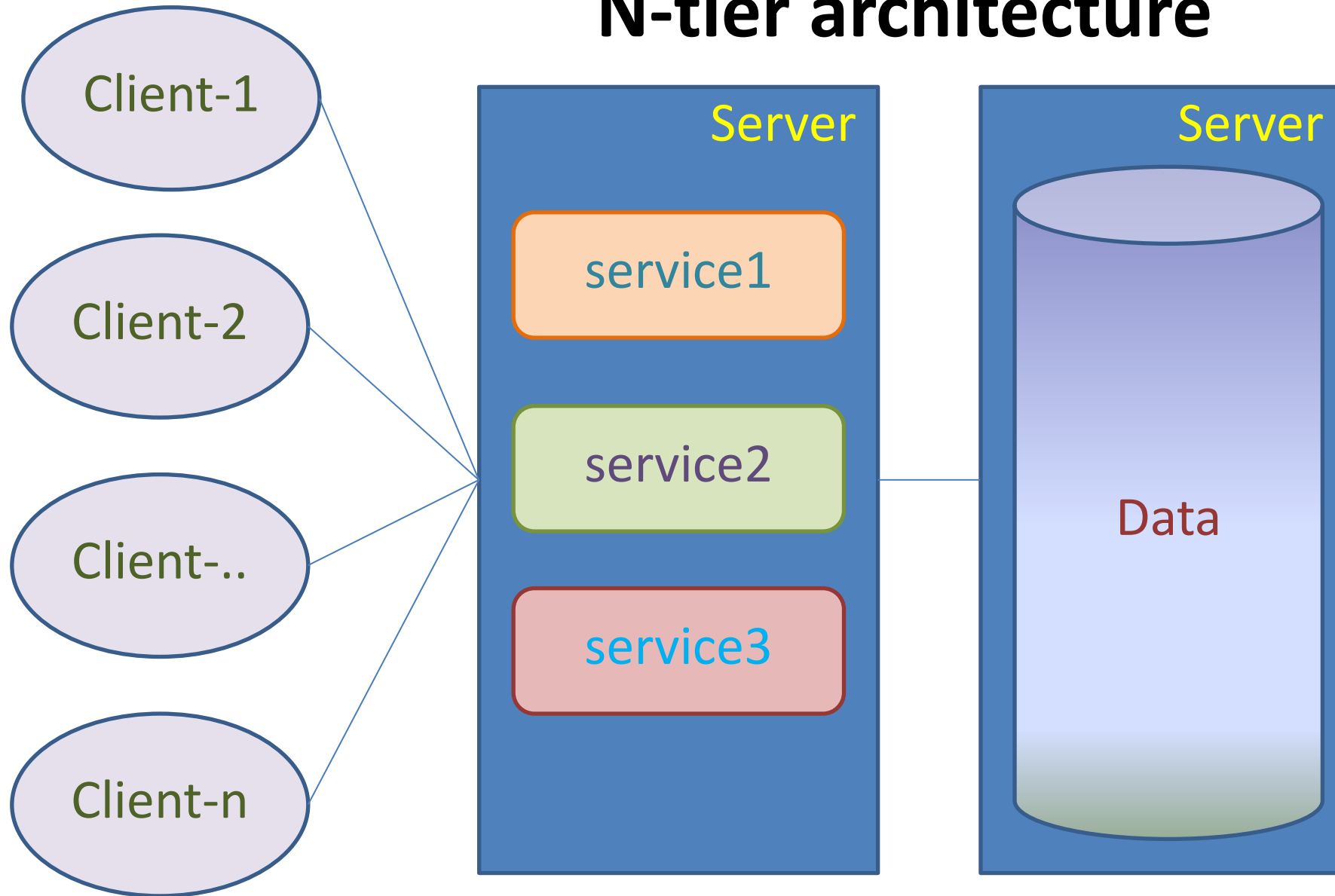
Evolution of WWW (cont.)

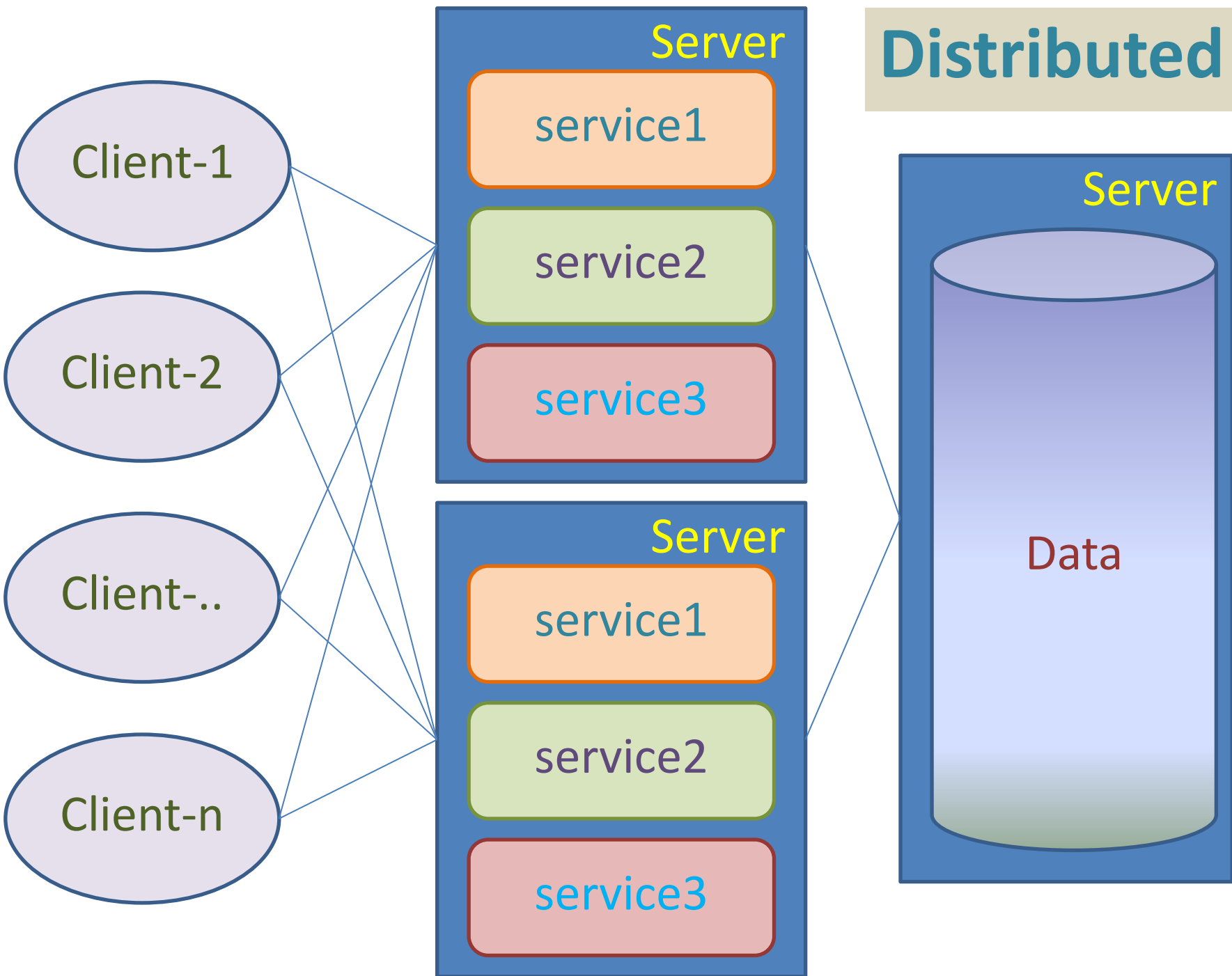
- From developer aspect
 - Client side
 - HTML
 - Web Scripting languages: JavaScript, VBScript
 - DHTML
 - AJAX
 - Server side
 - CGI -> Perl, C, C++, Pascal, Unix shell script, Python, TCL/TK, etc.
 - Server Side Include (SSI) -> .shtm or .shtml or .stm
 - Interpreter as a part of web server software -> PHP
 - Web Service, Web API, etc.

Centralize



N-tier architecture





Distributed

