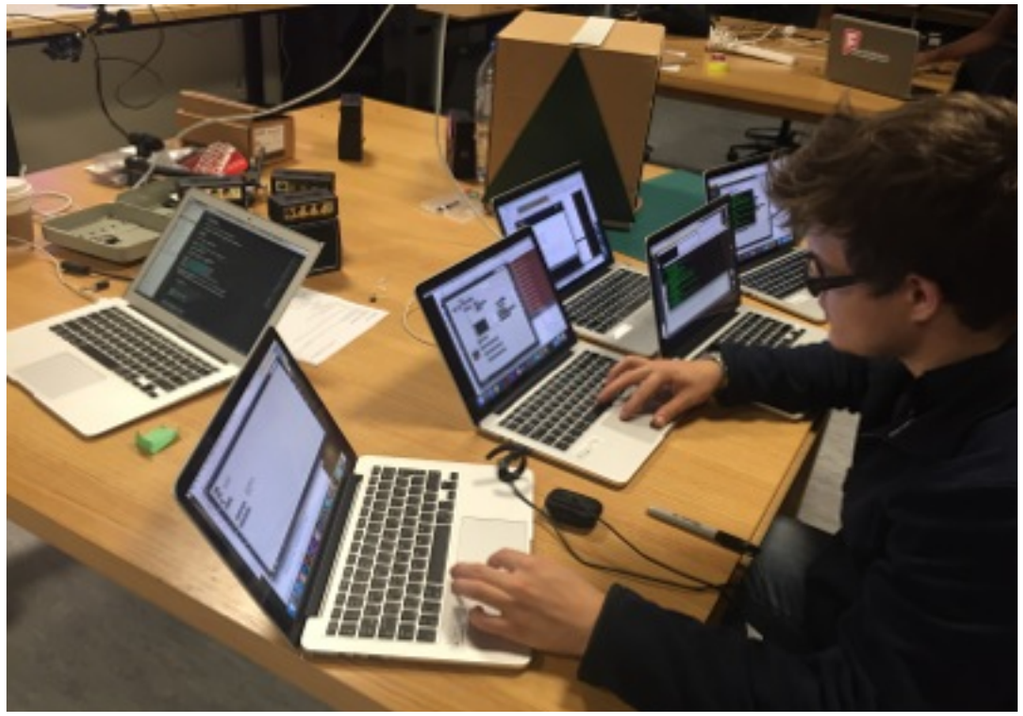
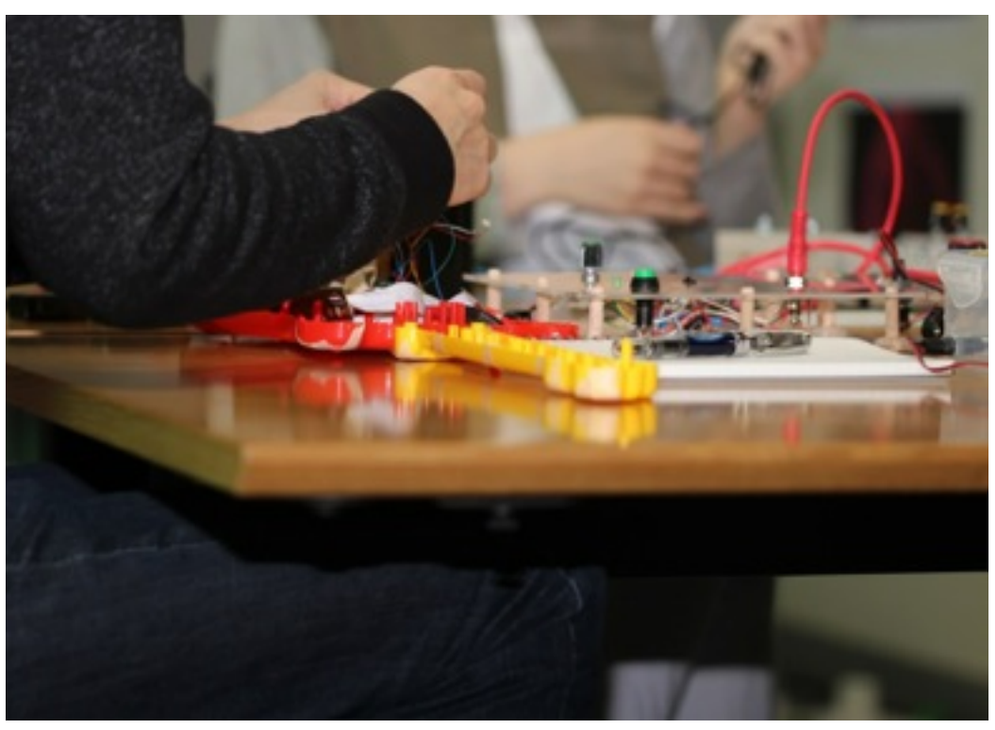
Intro to Web Data APIs

github.com/craigprotzel/web-api-workshop

Prof. Craig Protzel
Interactive Media
NYU Abu Dhabi
April 2017

INTERACTIVE MEDIA PROGRAM





WORKSHOP

Intro to WEB DATA APIs

What is the **WEB**?

A DEFINITION

WIKIPEDIA
The Free Encyclopedia

World Wide Web

The World Wide Web (WWW) is an information space where documents and other web resources are identified by Uniform Resource Locators URLs, interlinked by hypertext links, and can be accessed via the Internet.[1]. English scientist Tim Berners-Lee invented the World Wide Web in 1989. He wrote the first web browser computer program in 1990 while employed at CERN in Switzerland.[2][3]

The World Wide Web has been central to the development of the Information Age and is the primary tool billions of people use to interact on the Internet.[4][5][6]

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HTTP

A DEFINITION

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Hyper **T**ext **T**ransfer **P**rotocol

So how does it work?

WEB PROTOCOL

CLIENT

SERVER

WEB PROTOCOL

CLIENT

SERVER

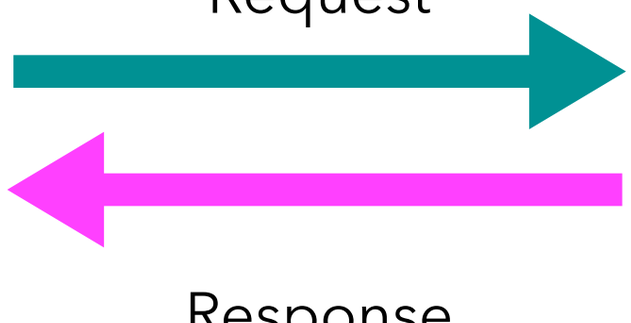
Request

WEB PROTOCOL

CLIENT

SERVER

Request



Response

WEB PROTOCOL

CLIENT

SERVER

Request

Response

FRONTEND

HTTP

BACKEND

WEB PROTOCOL

CLIENT

SERVER

Request

Response

FRONTEND

HTTP

BACKEND

SOME FILES

GET/POST

ALL THE FILES!!!

WEB PROTOCOL

CLIENT

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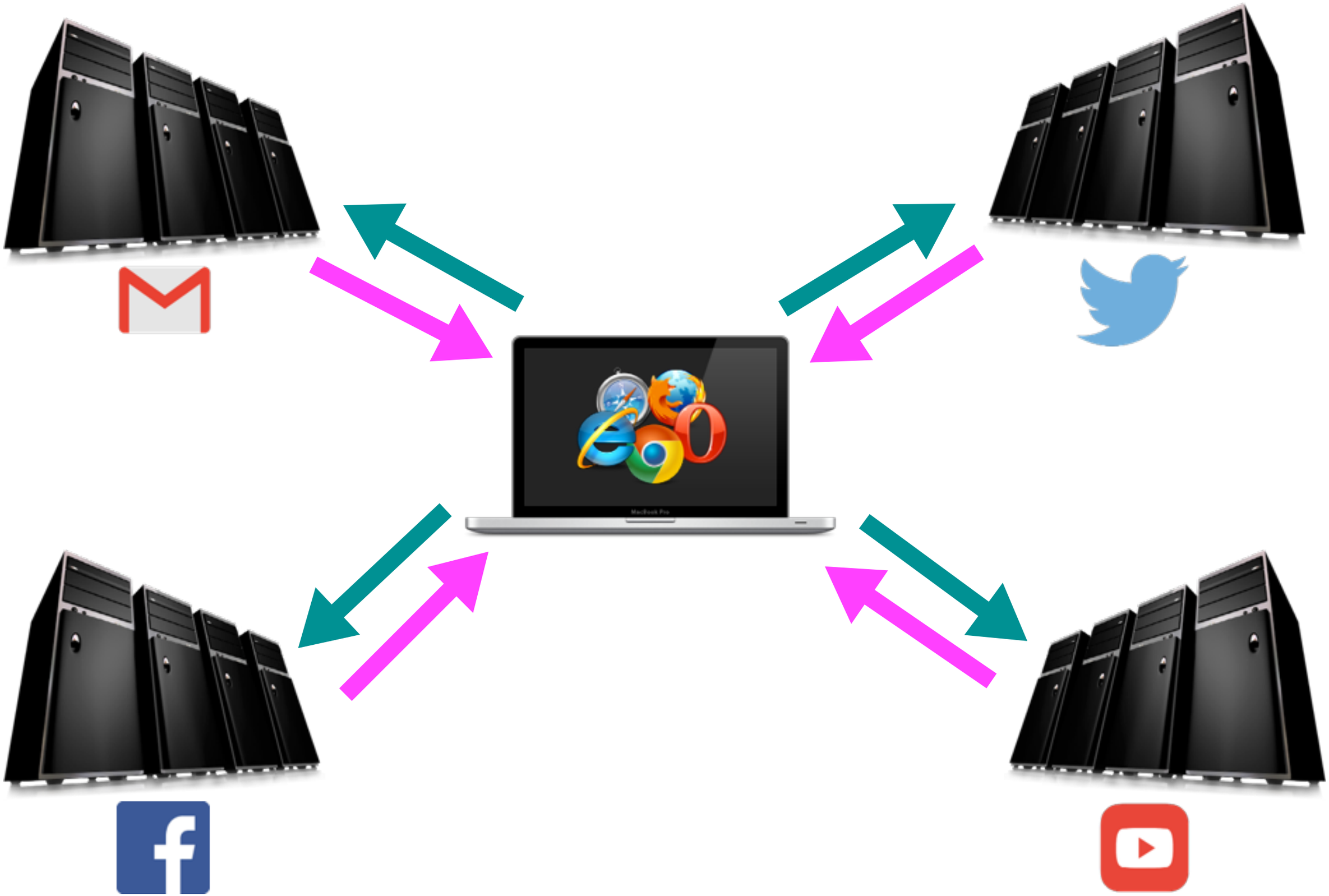
SOME FILES

GET/POST

ALL THE FILES!!!

CLIENT - SERVER

CLIENT - SERVER



HTTP REQUEST

"I want my Facebook"

HTTP RESPONSE

"I want my Facebook"

"Here you go"

```
index.html
style.css
scripts.js
```

HTTP RESPONSE

"I want my Facebook"

"Here you go"

```
index.html
style.css
scripts.js

photo.img
media.mov
objects.json
```

THE FRONTEND

HTML

A Markup Language

CONTENT

What info is on the page

THE FRONTEND

HTML

A Markup Language

CONTENT

What info is on the page

CSS

A Markup Language

STYLE

How the info looks

THE FRONTEND

HTML

A Markup Language

CONTENT

What info is on the page

CSS

A Markup Language

STYLE

How the info looks

JAVASCRIPT

A Programming Language

INTERACTIVITY

How the info behaves

THE BACKEND

HOST

Computer + OS

NYU, Heroku,
DreamHost, Local

THE BACKEND

HOST

Computer + OS

NYU, Heroku,
DreamHost, Local

SERVER

Code + Application Files

Apache - PHP, Python - Flask,
Ruby - Sinatra, Node.js - Express
+ .html, .css, + .js files

THE BACKEND

HOST
Computer + OS

NYU, Heroku,
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+ .html, .css, + .js files

DATABASE
Data Files + Query Language

ORM, non-ORM
mySQL, mongo
SQL, mongoose
tables, XML, JSON

What is an **API**?

Application Programming Interface

A set of requirements that govern how one application can talk to another

MENU ANALOGY

API RESOURCES

API LANDSCAPE

DEVICE API - access accelerometer data on phone

OS API - cut and paste from Adobe Illustrator to MS Word

FRAMEWORK API - use Processing functions to execute Java

PLATFORM API - leverage the canvas API in the browser

DATA API - query a list of images from Flickr

RESOURCE API - embed a Google map on a web page

SERVICE API - send IBM Watson a data set to analyze

API FOR APIs - use the temboo SDK to access 100+ APIs

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“Public Web” APIs

PUBLIC WEB APIs

URLs that give access to data, resources, and services from a public server

PUBLIC WEB APIs

URLs that give access to **data**, resources, and services from a public server

PUBLIC WEB APIs

URLs that give access to data, resources, and services from a public server

`http://api.nyuad.edu/conferences/dhad`

PUBLIC WEB APIs

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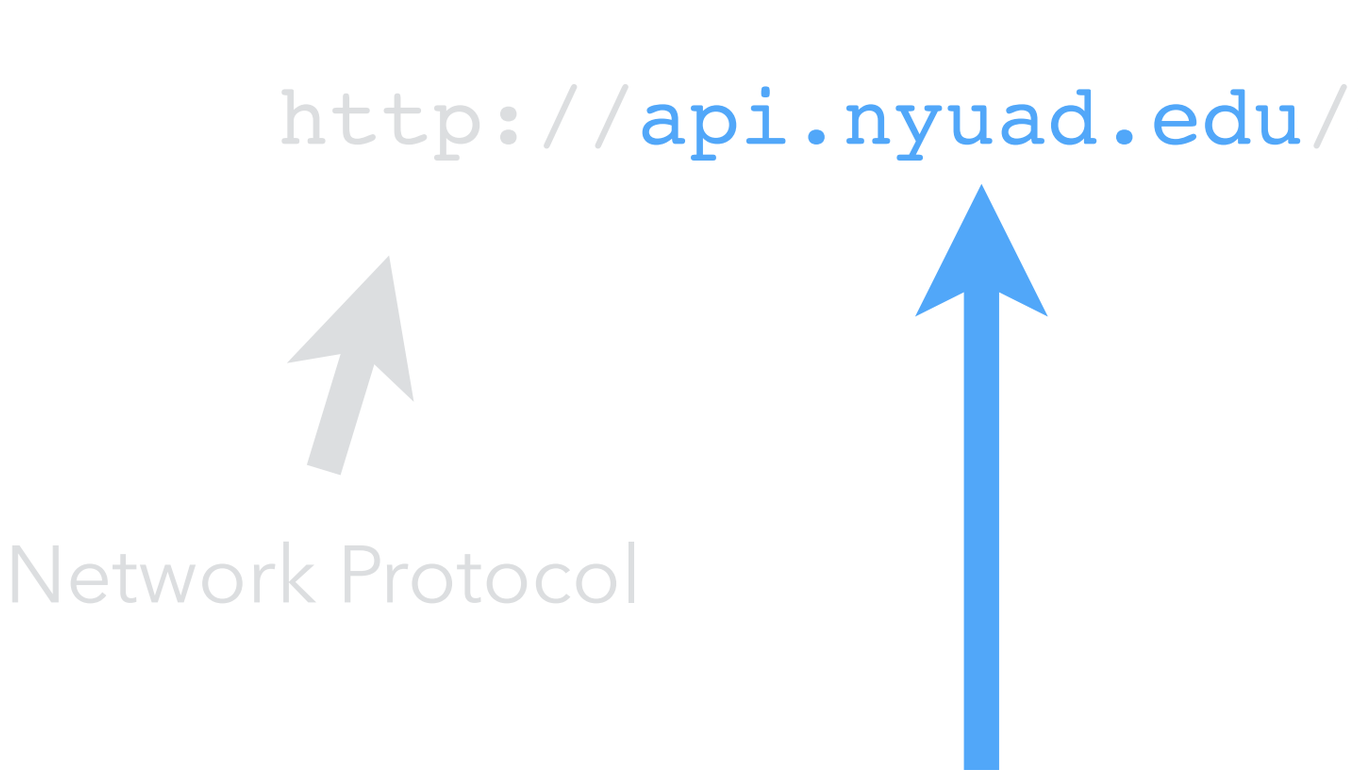
Network Protocol

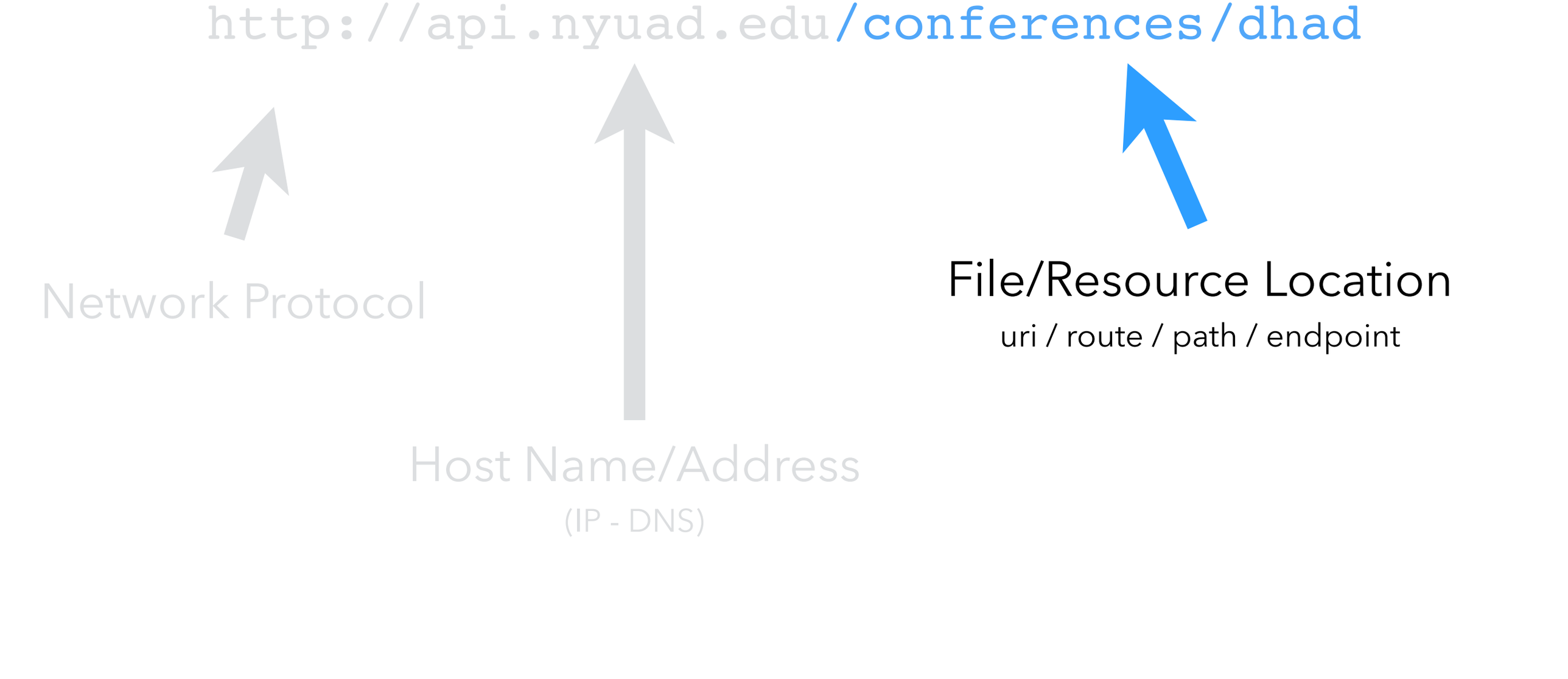
PUBLIC WEB APIs

URLs that give access to data, resources, and services from a public server



PUBLIC WEB APIs

URLs that give access to data, resources, and services from a public server



PUBLIC WEB APIs

URLs that give access to **data**, **resources, and services** from a public server

`http://api.nyuad.edu/conferences/dhad`

PUBLIC WEB APIs

URLs that give access to **data**, **resources, and services** from a public server

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```
{
  “division” : “Arts & Humanities”,
  “program” : “Digital Humanities”,
  “semester” : “Spring”,
  “location” : “A6”,
  “organizer” : “David Wrisley”
}
```

JSON - JavaScript Object Notation

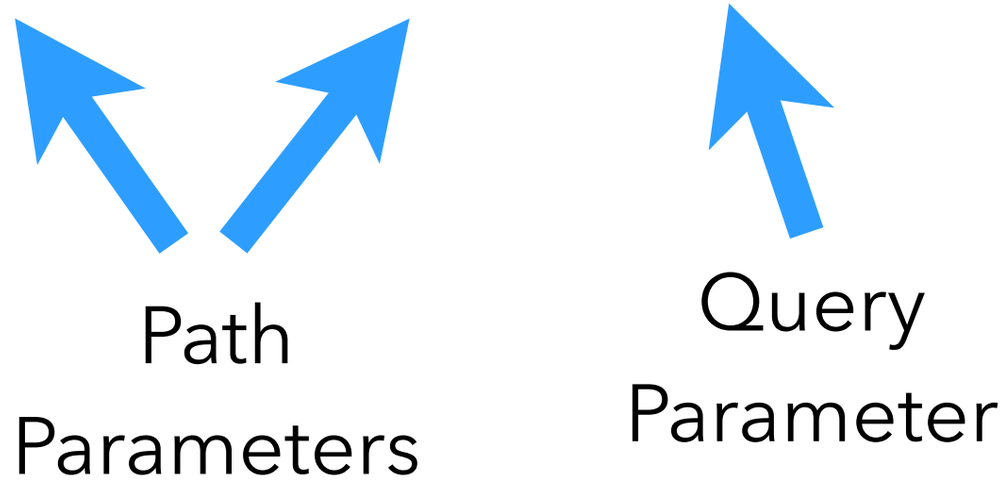
```
var dhadConference = {
  “division” : “Arts & Humanities”,
  “program” : “Digital Humanities”,
  “semester” : “Spring”,
  “location” : “A6”,
  “organizer” : “David Wrisley”
}
```

API QUERY

```
http://api.nyuad.edu/conferences/dhad?year=2017
```

API QUERY

`http://api.nyuad.edu/conferences/dhad?year=2017`



API DATA

http://api.nyuad.edu/conferences/dhad?year=2017


```
{
     "division" : "Arts & Humanities",
     "program" : "Digital Humanities",
     "semester" : "Spring",
     "location" : "A6",
     "organizer" : "David Wrisley",
     "year" : 2017,
     "participants" : 50,
     "schedule" : [
          {
               "date": "Mon Apr 10 2017",
               "panels" : 4,
               "workshops: 3
          },
          {
               "date": "Tues Apr 11 2017",
               "panels" : 4,
               "workshops: 1
          },
          {
               "date": "Tues Apr 11 2017",
               "panels" : 4,
               "workshops: 4
          }
     ]
}
```

MENU ANALOGY

OpenWeatherMap.org

WikiSearch

HowManyPeopleInSpace

KanyeREST

ESSA BAGEL ANALOGY

ESSA BAGEL ANALOGY

ESSA BAGEL “NORMAL” BIZ

ESSA BAGEL ANALOGY

ESSA BAGEL API

ESSA BAGEL “NORMAL” BIZ

MORE EXAMPLES

http://www.openi-ict.eu/openi-api-framework-part-i-studying-the-landscape-of-cloud-based-services/

OPEN API SPECTRUM

URL ONLY

HealthCare.gov

URL + KEY

OpenWeatherMap

The New York Times

URL + KEY *or*
URL + KEY + AUTHENTICATION

flickr

YouTube

URL + KEY + AUTHENTICATION

twitter

Instagram

WORKSHOP FLOW

WORKSHOP FLOW

1)

Client

REQUEST - my-webste.com

My Website Server
(local)

WORKSHOP FLOW

1)

Client

REQUEST - my-webste.com

My Website Server
(local)

2)

Client

RESPONSE - HTML, CSS, JS, & media

My Website Server
(local)

WORKSHOP FLOW

1)

Client

REQUEST - my-webste.com

My Website Server (local)

2)

Client

RESPONSE - HTML, CSS, JS, & media

My Website Server (local)

3)

Client

REQUEST- api.openweather.org

Open Weather Server

WORKSHOP FLOW

1)

Client

REQUEST - my-webste.com

My Website Server (local)

2)

Client

RESPONSE - HTML, CSS, JS, & media

My Website Server (local)

3)

Client

REQUEST- api.openweather.org

Open Weather Server

4)

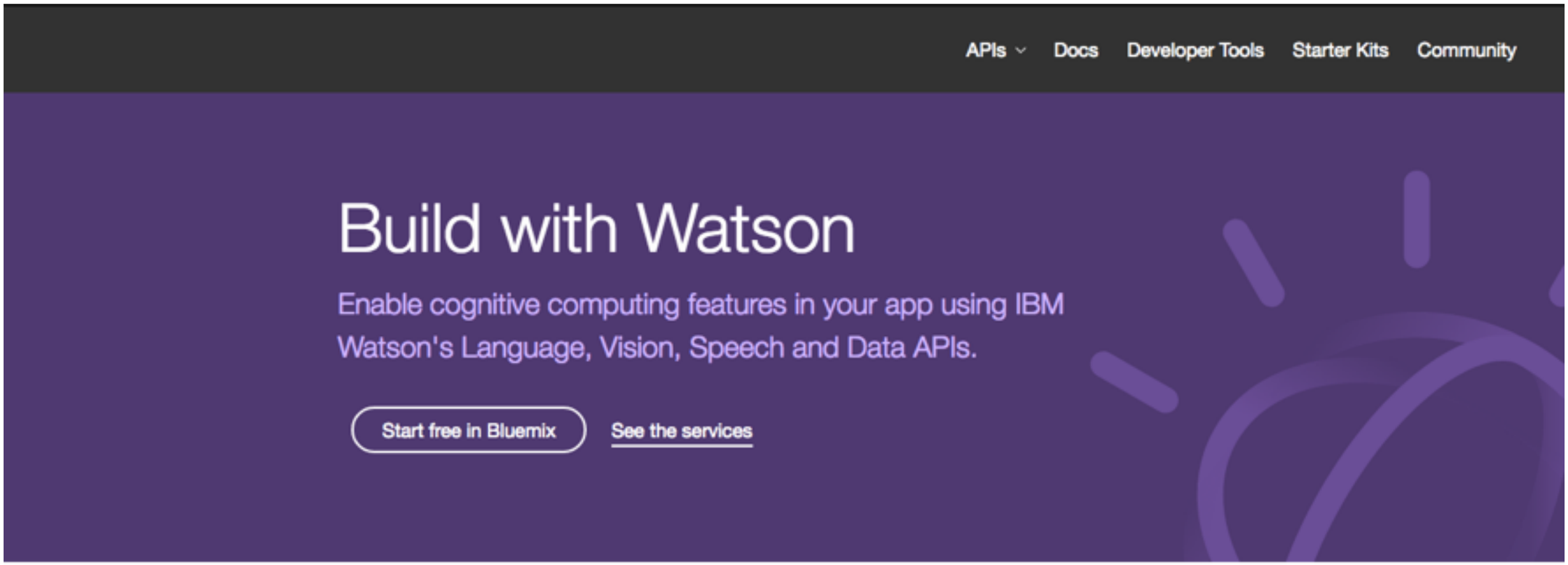
Client

RESPONSE - JSON data

Open Weather Server

BREAK

IBM WATSON



FEATURED APIS

Conversation

Build chatbots that understand natural language and deploy them on messaging platforms and websites, on any device

Explore the service

Discovery

Rapidly build a cognitive search and content analytics engine.

Explore the service

IBM WATSON

APIs Docs Developer Tools Starter Kits Community

Language

AlchemyLanguage

Conversation

Document Conversion

Language Translator

Natural Language Classifier

Natural Language Understanding

Personality Insights

Retrieve and Rank

Tone Analyzer

Speech

Speech to Text

Text to Speech

Vision

Visual Recognition

Data Insights

AlchemyData News

Discovery

Discovery News

Tradeoff Analytics

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