INTERACTION DESIGN

API

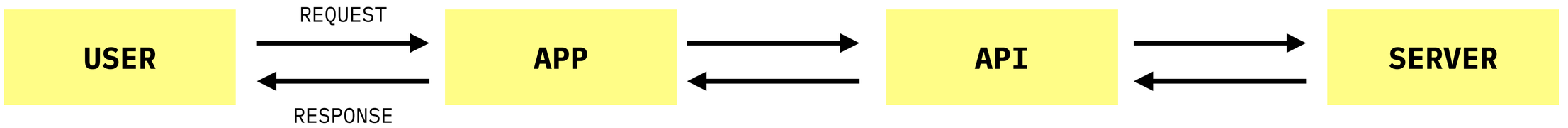
Data Visualisation HS21

API

API (Application Programming Interface) is an interface through which one application can access the services of another.The API acts as a middleman between any two machines that want to connect with each other for a specified task.

API

One of the biggest advantages of APIs is that they allow the abstraction of functionality between one system and another. Nearly all businesses that use any kind of modern technology use APIs at some level to retrieve data or interact with a database for customers to use.



WEB API

Browser is capable of creating a wide variety of user experiences, such as playing music, displaying intricate animations, and reacting to mouse or keyboard input. A browser gives control of these experiences to web developers via browser APIs using JavaScript.

REST

REST stands for **Representational State Transfer**. It is essentially an "architecture for networked applications." In other words, it's a set of standards that describe how computers should communicate with each other and with applications across a network.

REST defines certain specific operations that applications should be able to do in order to satisfy all of the **CRUD** (create, read, update, delete) requirements.

REST API

RESTful API is an **Application-Programmer Interface** for communicating with an application across a network using HTTP methods.

Not all HTTP APIs are REST APIs but all REST APIs are HTTP APIs.

REST API

There are four parts of a REST API request:

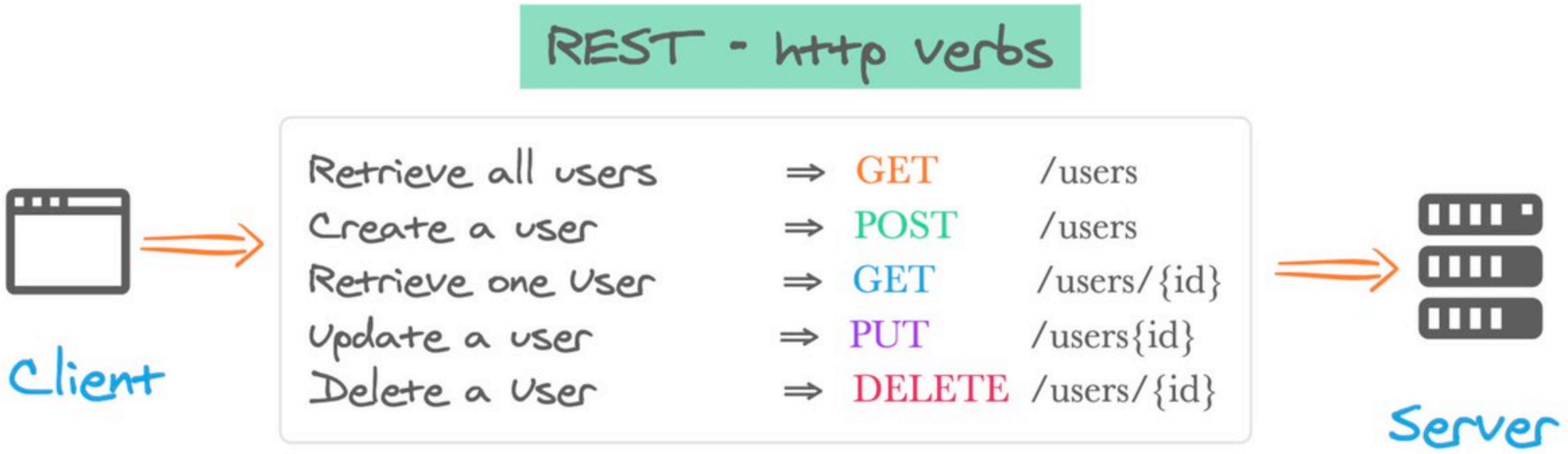
URI(Uniform Resource Identifier): the URL address, also known as an “endpoint”

HTTP: PUT, POST, GET, DELETE methods

Headers: include authentication tokens, define the data format of the response, impose rate limits

Body: (payload) the actual part of the request

REST API



Source:https://twitter.com/profulsadangi/status/1280087590654234626

REST API

Organises complex applications into a simple resource.

Can be used for synchronising data within websites without any issue.

Provides a flexible approach using XML or JSON format.

Allows the user to access identical standard data and objects.

Provides protection using OAuth protocol.

API DOWNSIDES

Many APIs allow only an X amount of calls per day, meaning that it’s hard to get new data.

Solution:
Using public API which allows for unlimited (or at least high) amount of requests

API DOWNSIDES

https://github.com/public-apis/public-apis

INTERACTION DESIGN

API IN P5.JS

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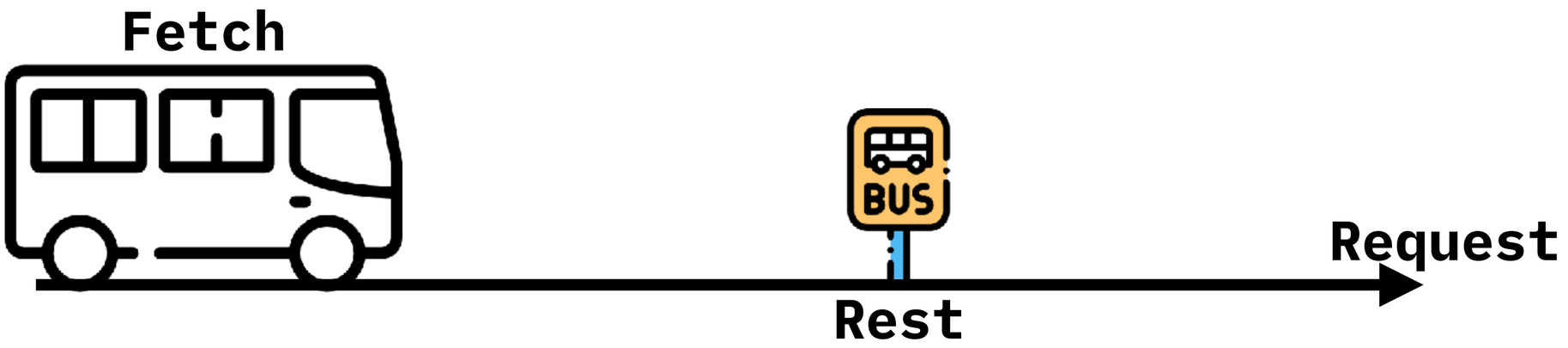
FETCH API

REST is a software architectural style which uses a subset of HTTP.

Fetch is a simple interface for fetching resources, that allows you to make external calls to a REST (or any other) type of data source.



FETCH API

```
var requestOptions = {
  method: 'GET',
  body: formdata,
  redirect: ‘follow’,
  headers: {authentication: ‘Basic’}
};


fetch(url, requestOptions)
  .then(function(response) {
    return response.text();
  })
  .then(function(text) {
    console.log('Request successful', text);
  })
  .catch(function(error) {
    log('Request failed', error)
  });
```

HTTP METHODS

httpGet(path, [datatype], [data], [callback], [errorCallback])

httpPost(path, [datatype], [data], [callback], [errorCallback])

httpDo(path, [method], [datatype], [data], [callback], [errorCallback]) <-- Allows headers!

Examples on openProcessing

EMISSIONS API

Emissions-API

Location Information: City(country) name, GeoJSON Data
Air Quality Information: methane, carbonmonoxide, ozone, nitrogendioxide

Downsides:
Limited API documentation
Entries updated once per day

Upsides:
Country specific
No limit calls
Registration and API key are not needed

IQAIR API

IQAir

Location Information: City name, station name and coordinates, GPS coordinates
Air Quality Information & Pollutants: AQI Index, PM2.5 and PM10, SO_2, CO, O_3, NO_2
Weather: Humidity & pressure, wind speed & direction, 3-day forecast

Downsides:
Needs registration to obtain API key
Only 500 calls/day with a free plan
City specific

Upsides:
Hourly updated data
Documentation for all languages