

# Hack Nights: APIs

FACTLab 2015

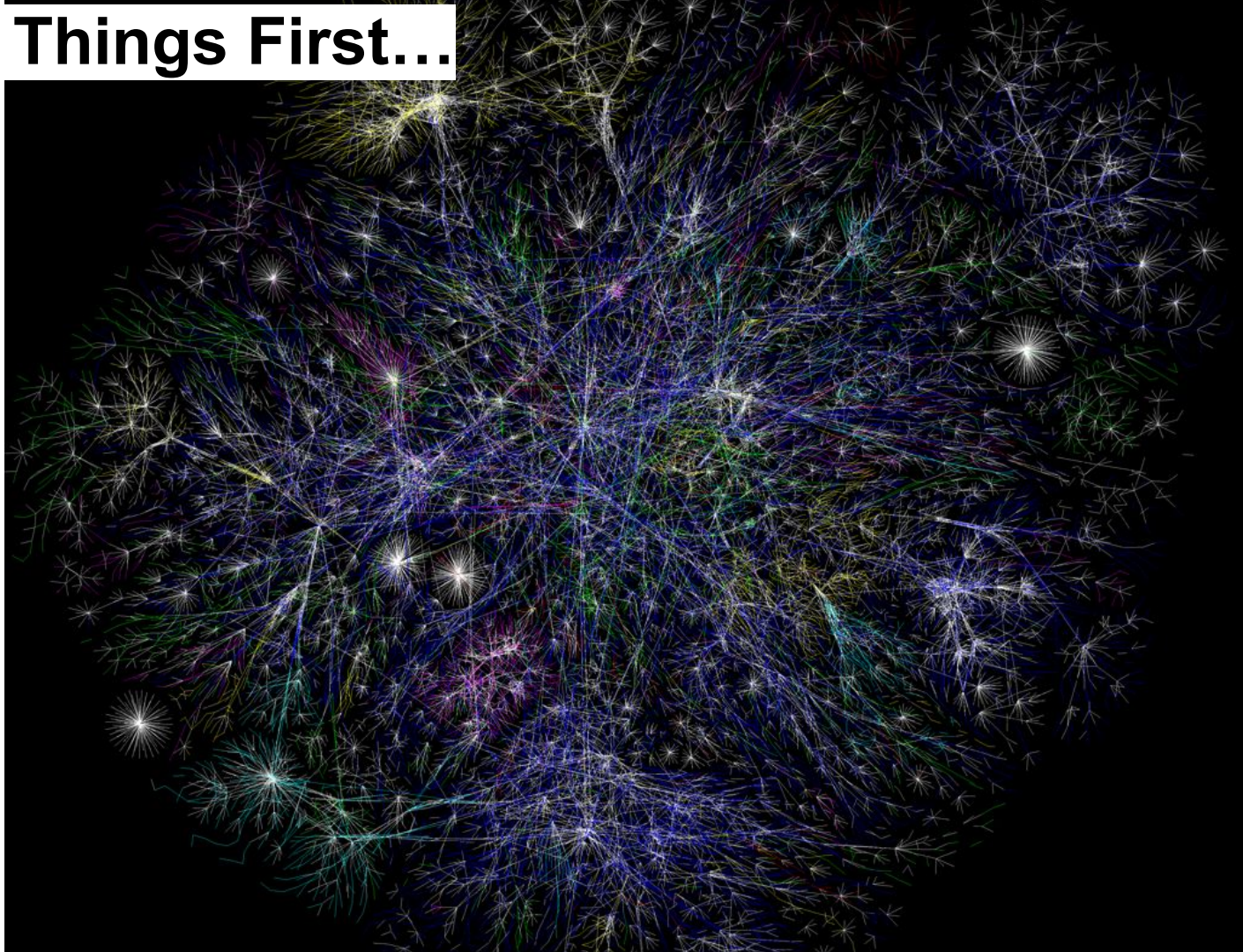
Radamés Ajna

radames.ajna@fact.co.uk

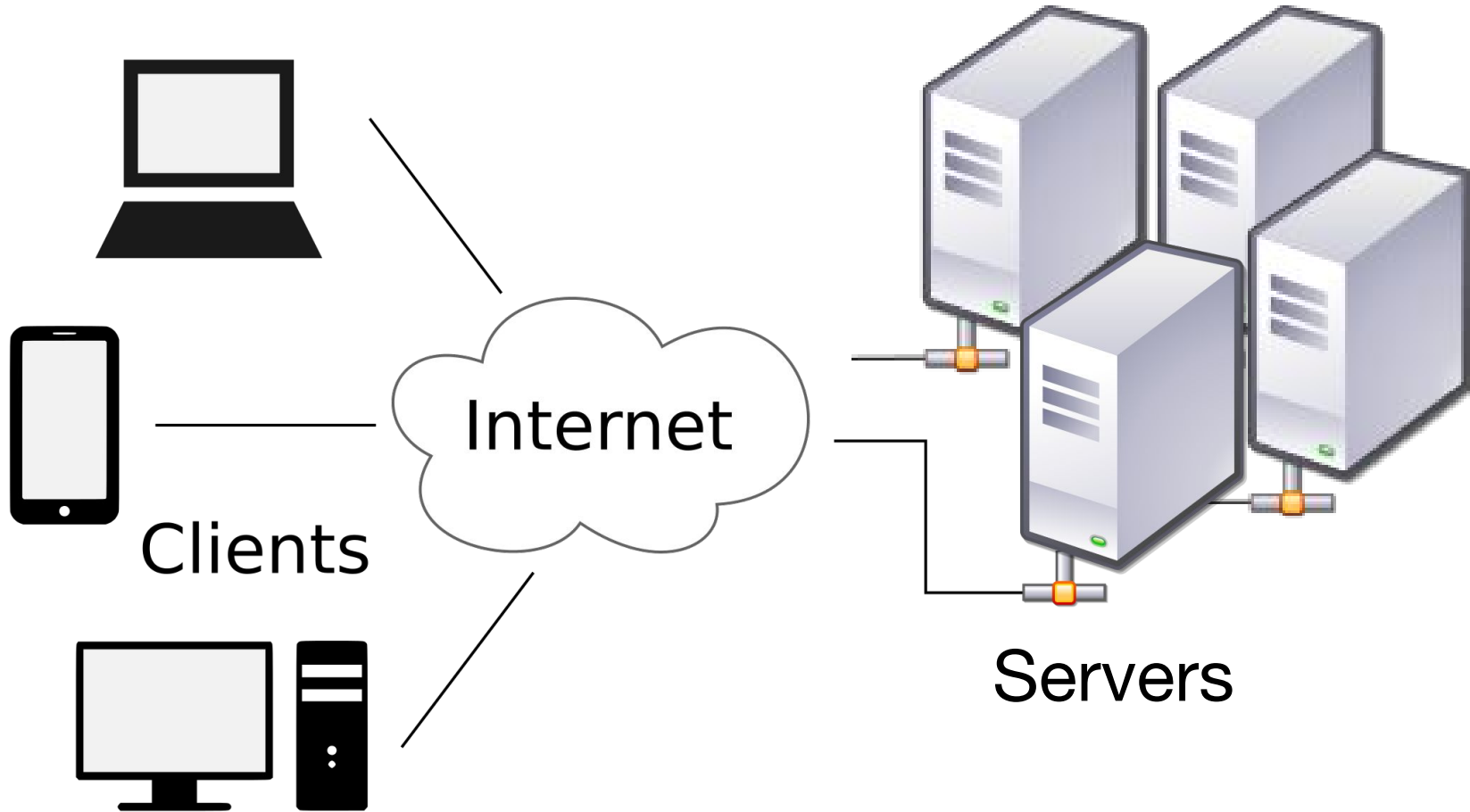
Thiago Hersan

thiago.hersan@fact.co.uk

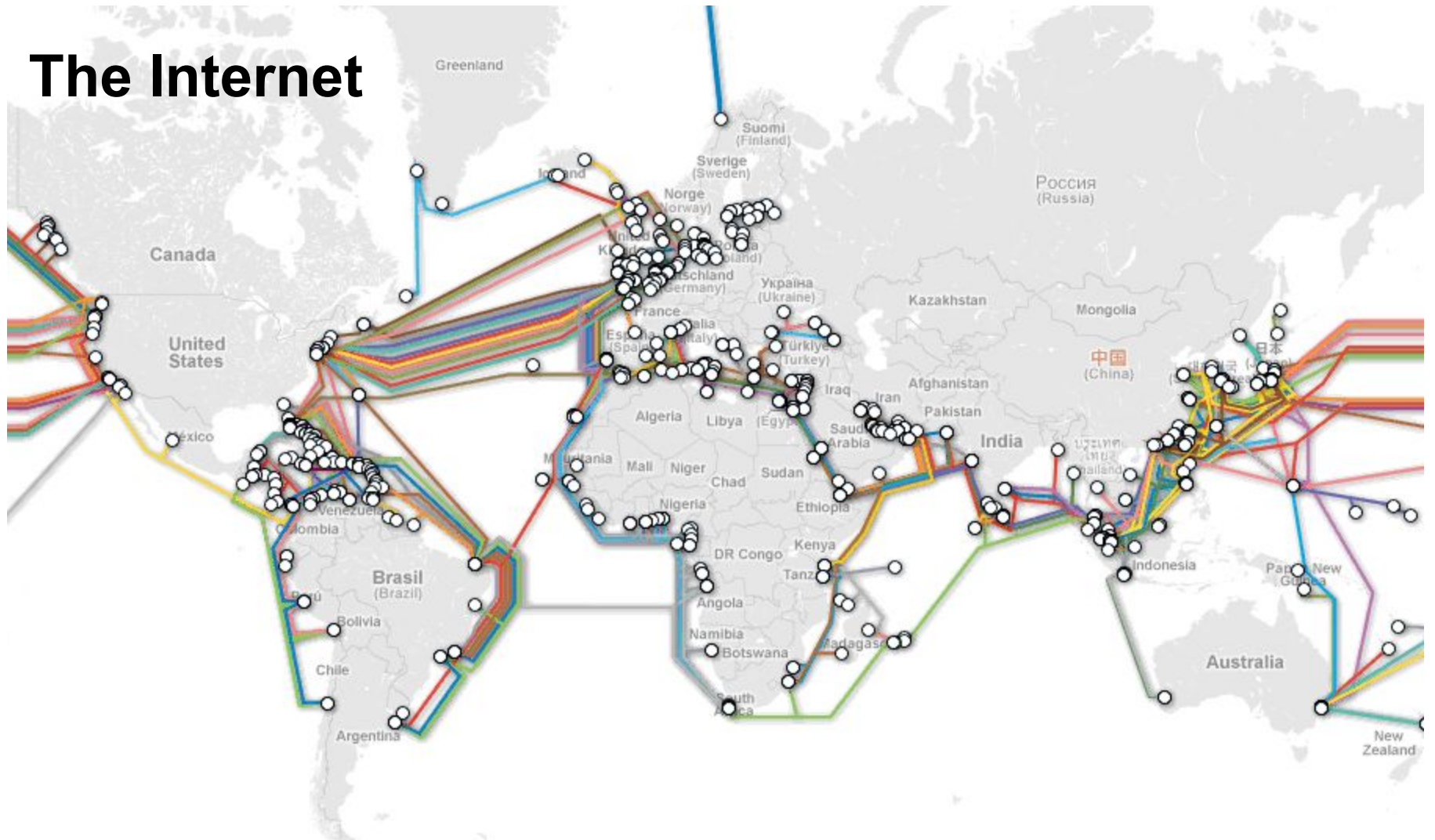
# First Things First...



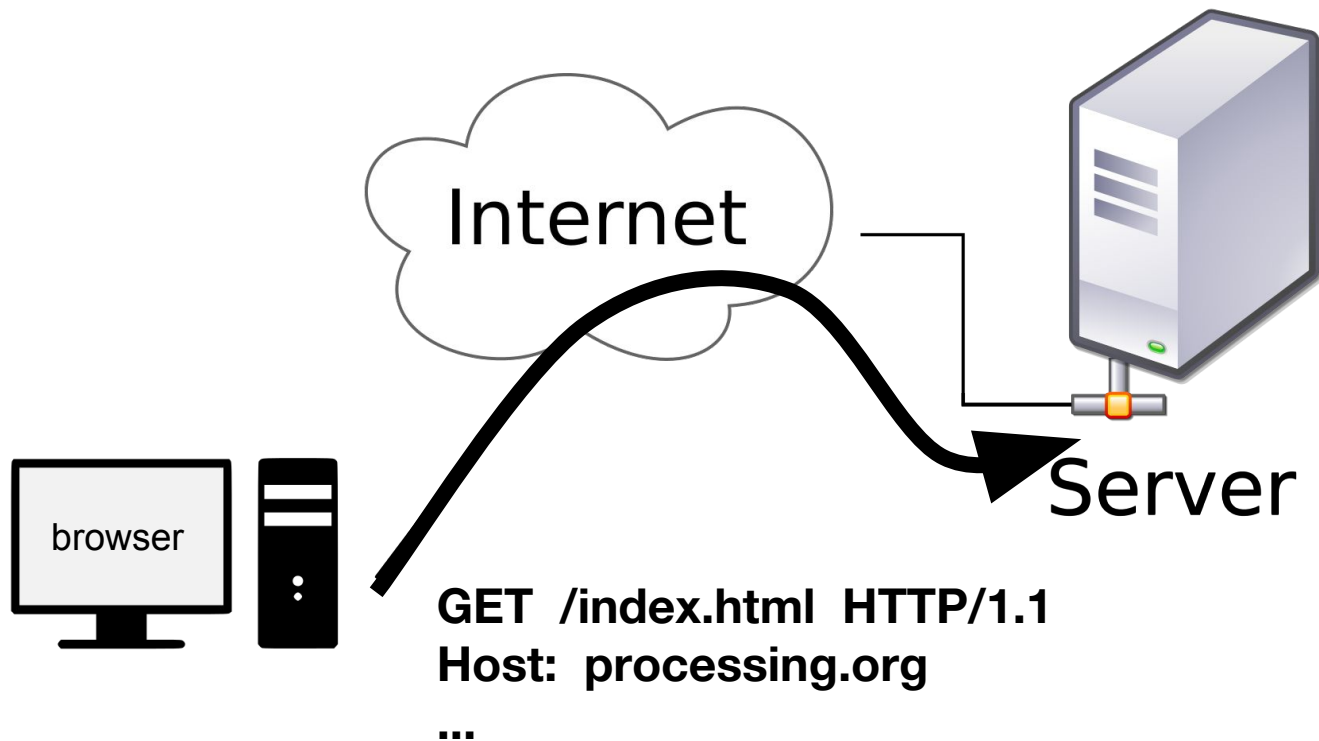
# The Internet



# The Internet

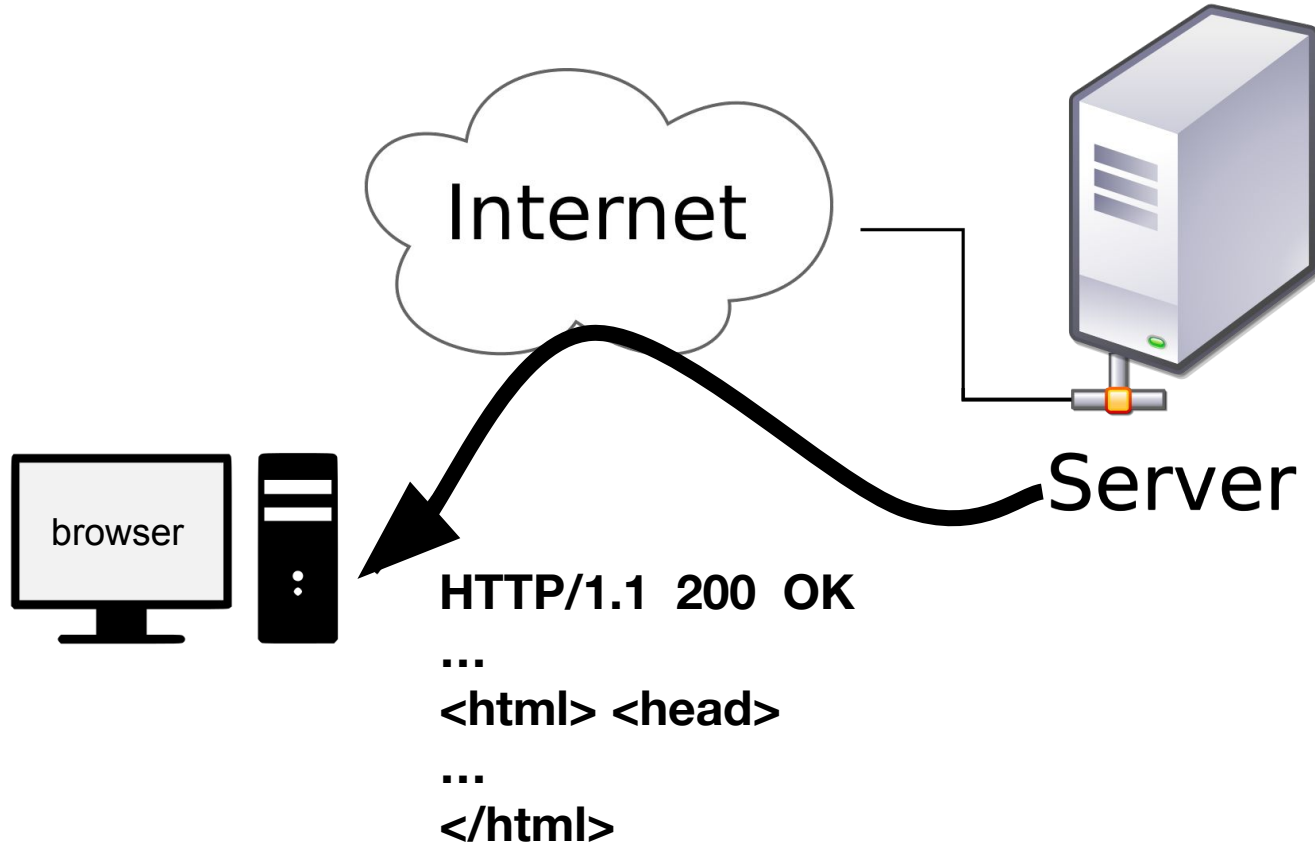


# Request





# Response



# Request in Processing

```
String responseText = "";

void setup() {
  size(1000, 700);
  String[] response = loadStrings("https://processing.org");
  for(int i=0; i<response.length; i++){
    responseText += response[i]+"\n";
  }
}

void draw() {
  background(0);
  fill(255);
  textSize(14);
  text(responseText, 0, 0);
}
```

# Response (text to be decoded by browser)

```
<html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en" lang="en">
<head>
<title>Processing.org</title>

<link rel="icon" href="/favicon.ico" type="image/x-icon" />

<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<meta name="Author" content="Processing Foundation" />
<meta name="Publisher" content="Processing Foundation" />
<meta name="Keywords" content="Processing, Sketchbook, Programming, Coding, Code, Art, Design" />
<meta name="Description" content="Processing is a flexible software sketchbook and a language for learning how to code within the context of t
<meta name="Copyright" content="All contents copyright the Processing Foundation, Ben Fry, Casey Reas, and the MIT Media Laboratory" />



  <script src="/javascript/modernizr-2.6.2.touch.js" type="text/javascript"></script>
<link href="/css/style.css" rel="stylesheet" type="text/css" />
</head>
<body id="Cover" onload="" >




<!-- ===== PAGE ===== -->
<div id="container">
```



# Not only humans interact with websites

## Sometimes websites interact with other websites



Thiago

News

U.S. editionModernPersonalize

Top Stories

Chicago Cubs

Toronto Blue Jays

Joe Biden

Lamar Odom

Paul Ryan

Bashar al-Assad

2012 Benghazi attack

Benjamin Netanyahu

Chris Rock

One Direction

Suggested for you

Scunthorpe, England, UK

World

U.S.

Business

Sci/Tech

Entertainment

Health


More Top Stories

Spotlight

Technology





Sports

Top Stories




**5 ways Joe Biden's decision changes the 2016 race**  
CNN - 6 hours ago  
Washington (CNN) The two leading contenders for the Democratic presidential nomination won't have to face off against the formidable -- and always unpredictable -- Vice President Joe Biden, who announced Wednesday afternoon that he won't make a late ...  
See realtime coverage


Related Joe Biden




CNN CNN CNN Washington...



**'Supermajority' of House Freedom Caucus to back Paul Ryan's speaker bid**  
Washington Post - 3 hours ago  
Hard-line conservatives cleared a path Wednesday for Rep. Paul Ryan to become House speaker when some of his most disgruntled fellow Republicans signaled that they would support his bid for the top job.



**Albuquerque road rage: Man confesses to killing 4-year-old, police say**  
CNN - 1 hour ago  
(CNN) A man detained in the road rage killing of a 4-year-old girl this week in New Mexico has confessed to the shooting, authorities said.



**Albuquerque Police Officer Shot, Search for Suspect Underway**  
NBCNews.com - 41 minutes ago  
An Albuquerque police officer was shot multiple times and critically injured





Recent

Japan Startup Gets Bank Money as Entrepreneurship Grows  
New York Times - 12 minutes ago

Bernie Sanders says he's open to legalizing marijuana use  
Washington Post - 23 minutes ago







Slovenia asks for EU police help to regulate migrant flow  
Reuters - 9 minutes ago

Weather for England, UK

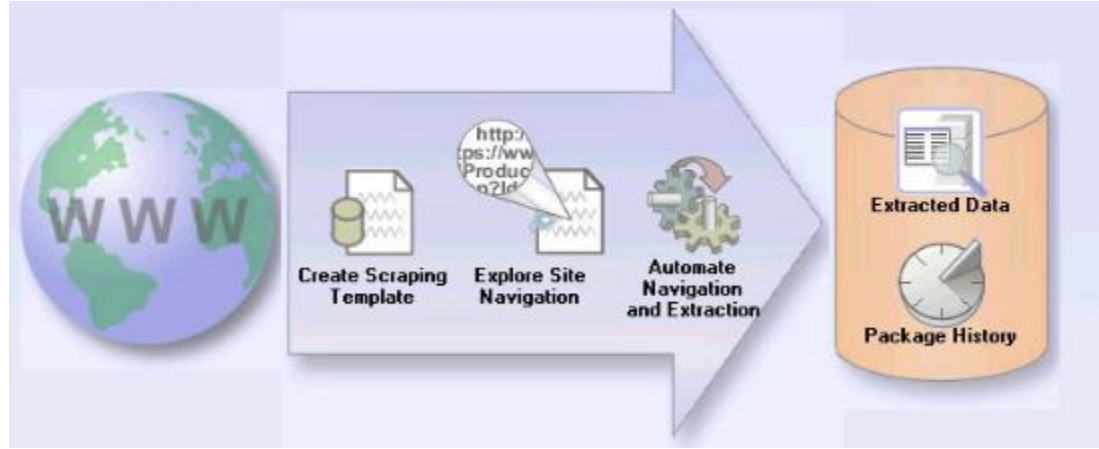
Today	Fri	Sat	Sun
			
14° 4°	14° 8°	13° 5°	13° 6°

The Weather Channel - Weather Underground - AccuWeather

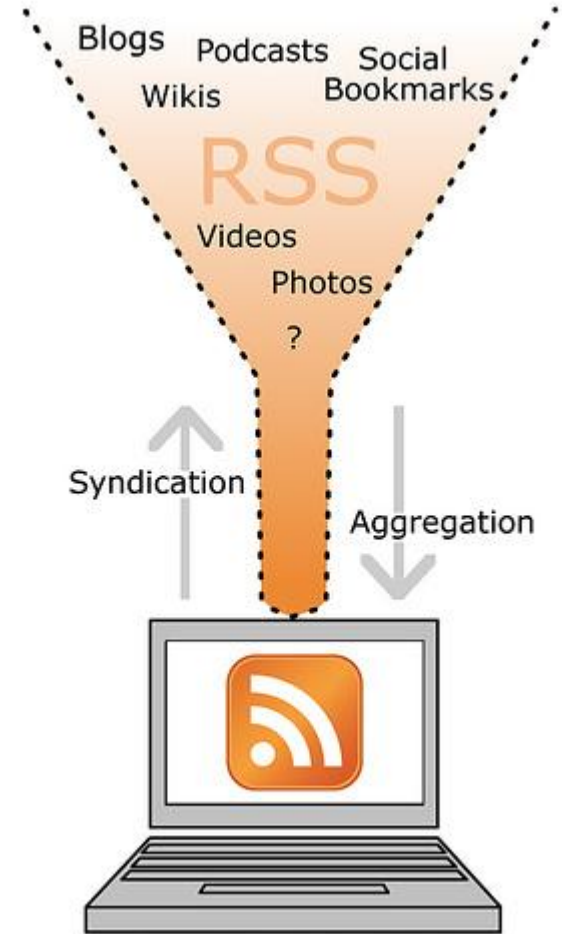
Sports scores

Today	Yesterday
NHL	
 ARI 2 - 3 Final NJ 	
 NYI 4 - 0 Final CLS 	
 FLA 2 - 3 Final PIT 	

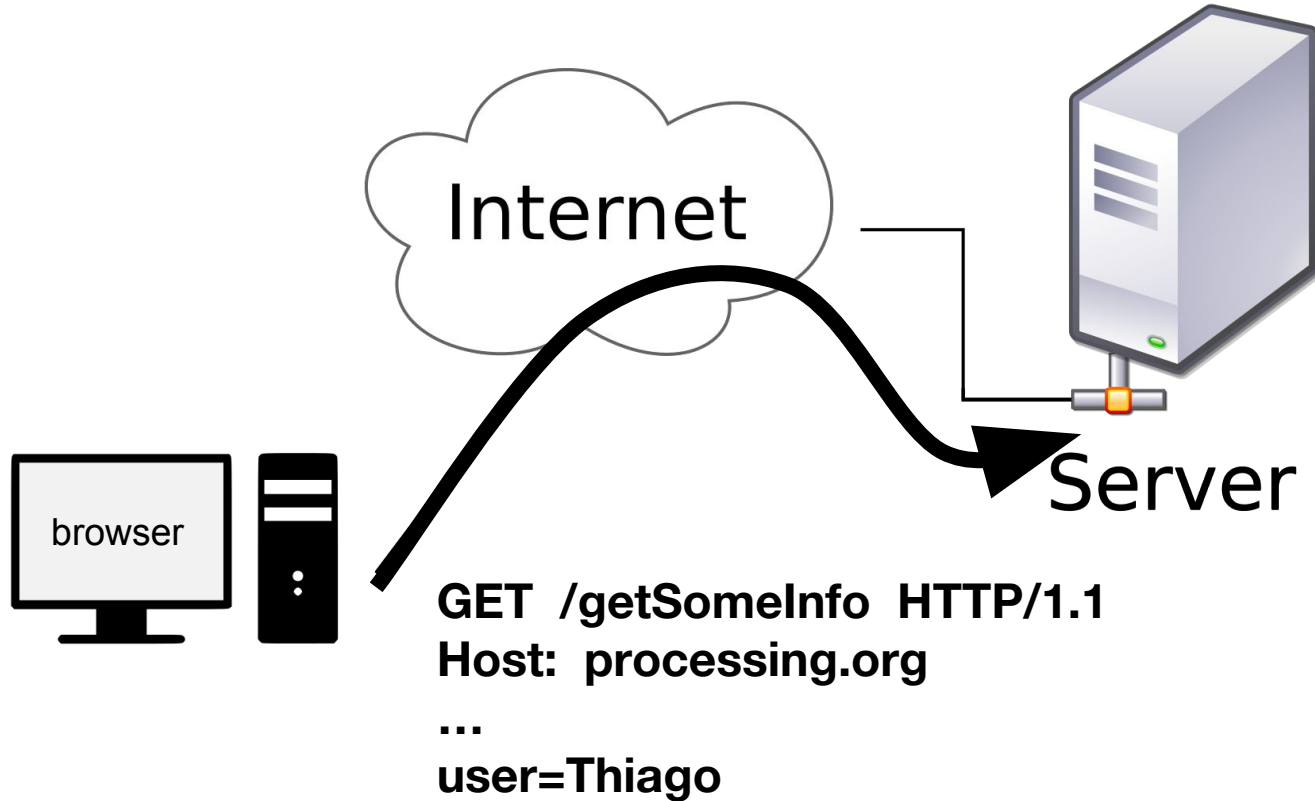
# Website on Website



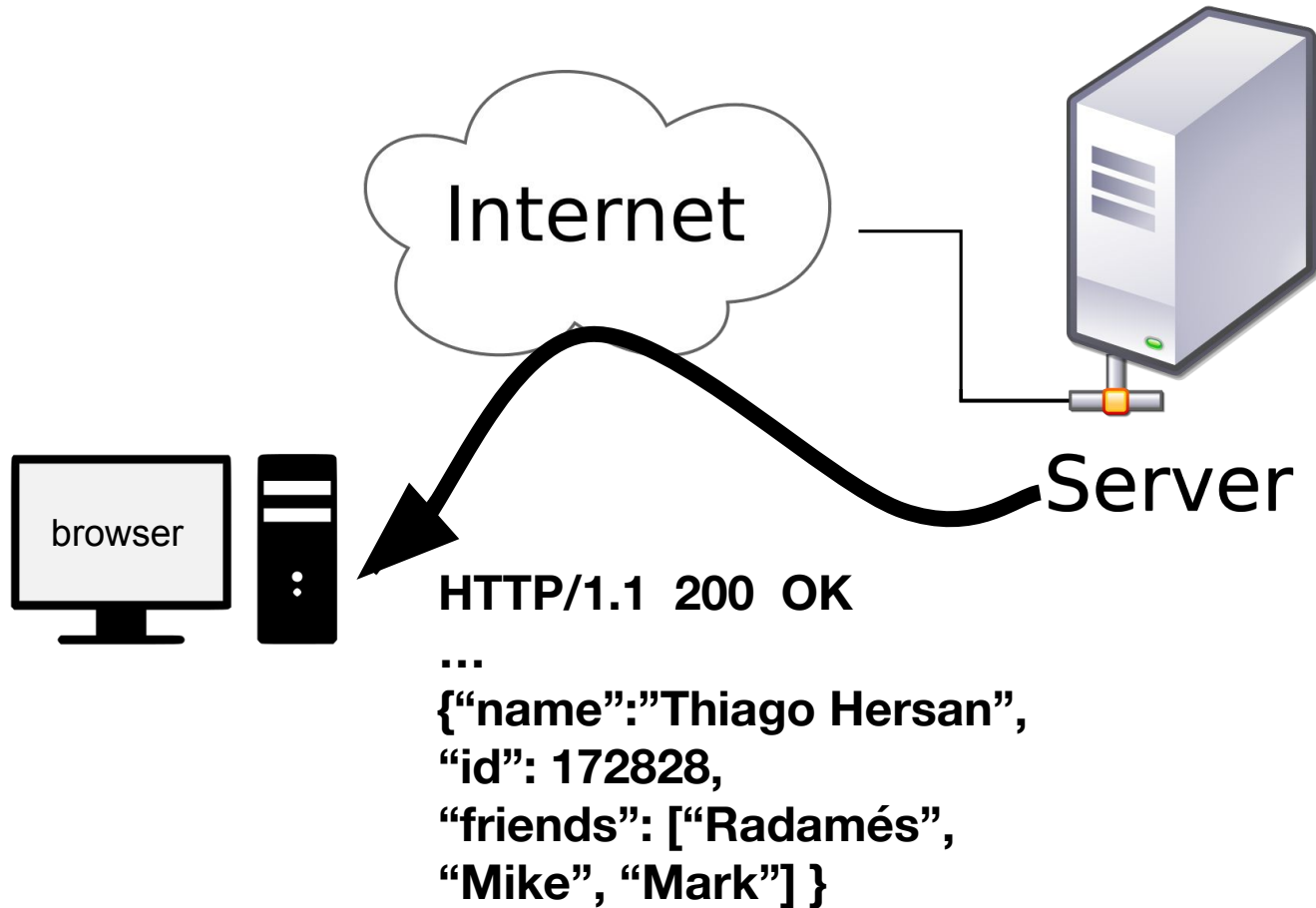
- Scraping
- RSS
- APIs



# API Request



# API Response (JSON)



# API Response (XML)

<http://tinyurl.com/hngsapi>

<http://clients1.google.com/complete/search?hl=en&output=toolbar&q=I%20think%20I>

```
▼<toplevel>
  ▼<CompleteSuggestion>
    <suggestion data="i think i love you"/>
  </CompleteSuggestion>
  ▼<CompleteSuggestion>
    <suggestion data="i think i love my wife"/>
  </CompleteSuggestion>
  ▼<CompleteSuggestion>
    <suggestion data="i think i wanna marry you"/>
  </CompleteSuggestion>
  ▼<CompleteSuggestion>
    <suggestion data="i think i found a cheerleader"/>
  </CompleteSuggestion>
  ▼<CompleteSuggestion>
    <suggestion data="i think i can"/>
  </CompleteSuggestion>
  ▼<CompleteSuggestion>
    <suggestion data="i think i'm in love"/>
  </CompleteSuggestion>
  ▼<CompleteSuggestion>
    <suggestion data="i think i love you lyrics"/>
  </CompleteSuggestion>
```

# More complicated API

```
String ACCESS_TOKEN = "CAACEdEose0cBAEalhEoiUJkTNggVEpm6tN4x7Y3lZAoMoOE";  
String USER_ID = "680143124";
```

```
JSONArray responseData;
```

```
void setup() {  
    size(500, 500);
```

```
    String request = "https://graph.facebook.com/v2.0/";  
    request += USER_ID;  
    request += "/friends?fields=name&limit=5000&offset=0&access_token=";  
    request += ACCESS_TOKEN;
```

```
    responseData = loadJSONObject(request).getJSONArray("data");
```

```
}
```



# api.tumblr.com

<http://tinyurl.com/hntsapi>

[http://api.tumblr.com/v2/tagged?tag=selfie&api\\_key=SVYcV0UUSsGf5CsuYkiNc7KSfEaRqsYuwEgtr3GYG0Owqb5lsw](http://api.tumblr.com/v2/tagged?tag=selfie&api_key=SVYcV0UUSsGf5CsuYkiNc7KSfEaRqsYuwEgtr3GYG0Owqb5lsw)

```
{
  "meta": {
    "status": 200,
    "msg": "OK",
    "response": [
      {
        "blog_name": "normalsworthashot",
        "id": 131715219201,
        "post_url": "http://normalsworthashot.tumblr.com/post/131715219201/ginger",
        "slug": "ginger",
        "type": "photo",
        "date": "2015-10-23 00:08:23 GMT",
        "timestamp": 1445558903,
        "state": "published",
        "format": "html",
        "reblog_key": "HeVlU2wt",
        "tags": [
          {
            "redhead": "selfie",
            "short_url": "http://tumblr.co/ZJ3iDxIwgrhy1",
            "recommended_source": null,
            "recommended_color": null,
            "highlighted": false,
            "note_count": 0,
            "caption": "\u003Cp\u003EGinger.\u003C/p\u003E",
            "reblog": {
              "tree_html": "",
              "comment": "\u003Cp\u003EGinger.\u003C/p\u003E",
              "trail": [
                {
                  "blog": {
                    "name": "normalsworthashot",
                    "active": true,
                    "theme": {
                      "header_full_width": 640,
                      "header_full_height": 1136,
                      "header_focus_width": 532,
                      "header_focus_height": 299,
                      "avatar_shape": "square",
                      "background_color": "#B0EDFF",
                      "body_font": "Helvetica Neue",
                      "header_bounds": {
                        "x": 490,
                        "y": 590,
                        "width": 789,
                        "height": 58
                      },
                      "header_image": "http://static.tumblr.com/e26b193f766146b8d56de9240e507e9a/3ukeeyj/Akpnoks5v/tumblr_static.jpg",
                      "header_image_focused": "http://static.tumblr.com/e26b193f766146b8d56de9240e507e9a/3ukeeyj/01znoks5w/tumblr_static_focused_v3.jpg",
                      "header_image_scaled": "http://static.tumblr.com/e26b193f766146b8d56de9240e507e9a/3ukeeyj/Akpnoks5v/tumblr_static_2048_v2.jpg",
                      "header_stretch": true,
                      "link_color": "#C0A4D2",
                      "show_avatar": true,
                      "show_description": true,
                      "show_header_image": true,
                      "show_title": true,
                      "title_color": "#444444",
                      "title_font": "Streetscript",
                      "title_font_weight": "bold"
                    }
                  },
                  "id": 131715219201,
                  "content_raw": "\u003Cp\u003EGinger.\u003C/p\u003E",
                  "content": "\u003Cp\u003EGinger.\u003C/p\u003E",
                  "is_current_item": true,
                  "is_root_item": true
                }
              ],
              "image_permalink": "http://normalsworthashot.tumblr.com/image/131715219201",
              "photos": [
                {
                  "url": "http://40.media.tumblr.com/ad52df60f8e351069adb72fd0bd0b64c/tumblr_nwnce0ojldlqjm9q5ol_1280.jpg",
                  "width": 1280,
                  "height": 1600
                },
                {
                  "url": "http://41.media.tumblr.com/ad52df60f8e351069adb72fd0bd0b64c/tumblr_nwnce0ojldlqjm9q5ol_500.jpg",
                  "width": 500,
                  "height": 625
                },
                {
                  "url": "http://40.media.tumblr.com/ad52df60f8e351069adb72fd0bd0b64c/tumblr_nwnce0ojldlqjm9q5ol_400.jpg",
                  "width": 400,
                  "height": 500
                },
                {
                  "url": "http://40.media.tumblr.com/ad52df60f8e351069adb72fd0bd0b64c/tumblr_nwnce0ojldlqjm9q5ol_250.jpg",
                  "width": 250,
                  "height": 313
                },
                {
                  "url": "http://40.media.tumblr.com/ad52df60f8e351069adb72fd0bd0b64c/tumblr_nwnce0ojldlqjm9q5ol_100.jpg",
                  "width": 100,
                  "height": 125
                },
                {
                  "url": "http://41.media.tumblr.com/ad52df60f8e351069adb72fd0bd0b64c/tumblr_nwnce0ojldlqjm9q5ol_75sq.jpg",
                  "width": 75,
                  "height": 75
                }
              ],
              "original_size": {
                "url": "http://40.media.tumblr.com/ad52df60f8e351069adb72fd0bd0b64c/tumblr_nwnce0ojldlqjm9q5ol_1280.jpg",
                "width": 1280,
                "height": 1600
              },
              "exif": {
                "Camera": "iPhone 6",
                "ISO": 200,
                "Aperture": "f/2.2",
                "Exposure": "1/30th",
                "FocalLength": "2mm"
              }
            }
          ],
          {
            "blog_name": "zlambertk",
            "id": 131715193436,
            "post_url": "http://zlambertk.tumblr.com/post/131715193436",
            "slug": "",
            "type": "photo",
            "date": "2015-10-23 00:07:55 GMT",
            "timestamp": 1445558875,
            "state": "published",
            "format": "html",
            "reblog_key": "83hSO2jc",
            "tags": [
              {
                "selfie": "selfie",
                "short_url": "http://tumblr.co/ZepCjRjIwgrbfs",
                "recommended_source": null,
                "recommended_color": null,
                "highlighted": false,
                "note_count": 0,
                "caption": "",
                "reblog": {
                  "tree_html": "",
                  "comment": "",
                  "trail": [
                    {
                      "blog": {
                        "name": "zlambertk",
                        "active": true,
                        "theme": {
                          "header_full_width": 640,
                          "header_full_height": 1136,
                          "header_focus_width": 532,
                          "header_focus_height": 299,
                          "avatar_shape": "square",
                          "background_color": "#B0EDFF",
                          "body_font": "Helvetica Neue",
                          "header_bounds": {
                            "x": 490,
                            "y": 590,
                            "width": 789,
                            "height": 58
                          },
                          "header_image": "http://static.tumblr.com/e26b193f766146b8d56de9240e507e9a/3ukeeyj/Akpnoks5v/tumblr_static.jpg",
                          "header_image_focused": "http://static.tumblr.com/e26b193f766146b8d56de9240e507e9a/3ukeeyj/01znoks5w/tumblr_static_focused_v3.jpg",
                          "header_image_scaled": "http://static.tumblr.com/e26b193f766146b8d56de9240e507e9a/3ukeeyj/Akpnoks5v/tumblr_static_2048_v2.jpg",
                          "header_stretch": true,
                          "link_color": "#C0A4D2",
                          "show_avatar": true,
                          "show_description": true,
                          "show_header_image": true,
                          "show_title": true,
                          "title_color": "#444444",
                          "title_font": "Streetscript",
                          "title_font_weight": "bold"
                        }
                      },
                      "id": 131715193436,
                      "content_raw": "\u003Cp\u003Ezlambertk.\u003C/p\u003E",
                      "content": "\u003Cp\u003Ezlambertk.\u003C/p\u003E",
                      "is_current_item": true,
                      "is_root_item": true
                    }
                  ],
                  "image_permalink": "http://zlambertk.tumblr.com/image/131715193436",
                  "photos": [
                    {
                      "url": "http://40.media.tumblr.com/ad52df60f8e351069adb72fd0bd0b64c/tumblr_nwnce0ojldlqjm9q5ol_1280.jpg",
                      "width": 1280,
                      "height": 1600
                    },
                    {
                      "url": "http://41.media.tumblr.com/ad52df60f8e351069adb72fd0bd0b64c/tumblr_nwnce0ojldlqjm9q5ol_500.jpg",
                      "width": 500,
                      "height": 625
                    },
                    {
                      "url": "http://40.media.tumblr.com/ad52df60f8e351069adb72fd0bd0b64c/tumblr_nwnce0ojldlqjm9q5ol_400.jpg",
                      "width": 400,
                      "height": 500
                    },
                    {
                      "url": "http://40.media.tumblr.com/ad52df60f8e351069adb72fd0bd0b64c/tumblr_nwnce0ojldlqjm9q5ol_250.jpg",
                      "width": 250,
                      "height": 313
                    },
                    {
                      "url": "http://40.media.tumblr.com/ad52df60f8e351069adb72fd0bd0b64c/tumblr_nwnce0ojldlqjm9q5ol_100.jpg",
                      "width": 100,
                      "height": 125
                    },
                    {
                      "url": "http://41.media.tumblr.com/ad52df60f8e351069adb72fd0bd0b64c/tumblr_nwnce0ojldlqjm9q5ol_75sq.jpg",
                      "width": 75,
                      "height": 75
                    }
                  ],
                  "original_size": {
                    "url": "http://40.media.tumblr.com/ad52df60f8e351069adb72fd0bd0b64c/tumblr_nwnce0ojldlqjm9q5ol_1280.jpg",
                    "width": 1280,
                    "height": 1600
                  },
                  "exif": {
                    "Camera": "iPhone 6",
                    "ISO": 200,
                    "Aperture": "f/2.2",
                    "Exposure": "1/30th",
                    "FocalLength": "2mm"
                  }
                }
              ]
            }
          ]
        ]
      }
    ]
  }
}
```

**api.tumblr.com + jumblr + POST = LOLZ**

