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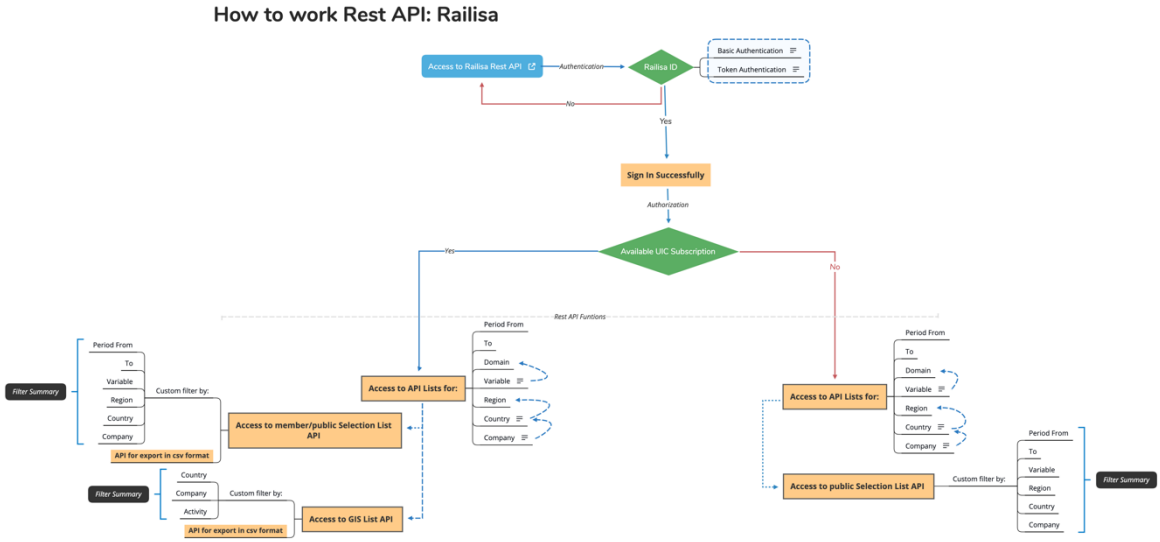
1 Abstract

The purpose of this document is to explain to the end user how to use the Rest API provided by Railisa.

2 Railisa Rest API proof of concept

The Railisa Rest API implemented as the Railisa web application module.
This module provides to the end user with all the functionalities offered by Railisa Application, but all the functionalities will be provided as REST APIs.
Practically the end user will have the possibility to integrate these functionalities in his own application, having the possibility to make queries and to obtain the data in JSON or csv format.
The figure below shows the logical flow of Railisa Rest API.



3 Functionalities of Railisa Rest API

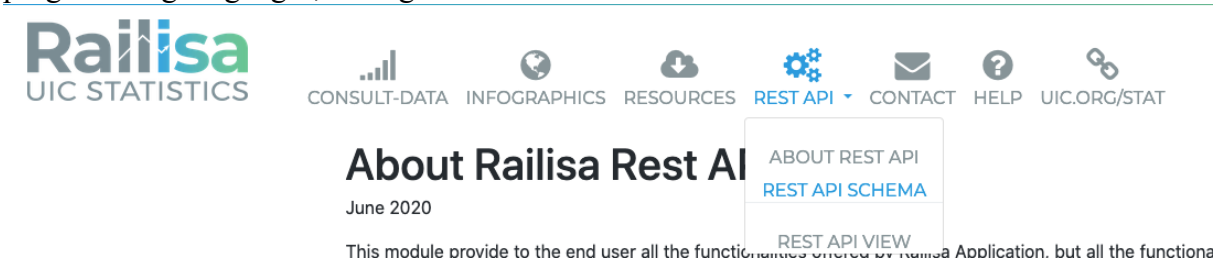
Railisa Rest API provide the following functionalities:

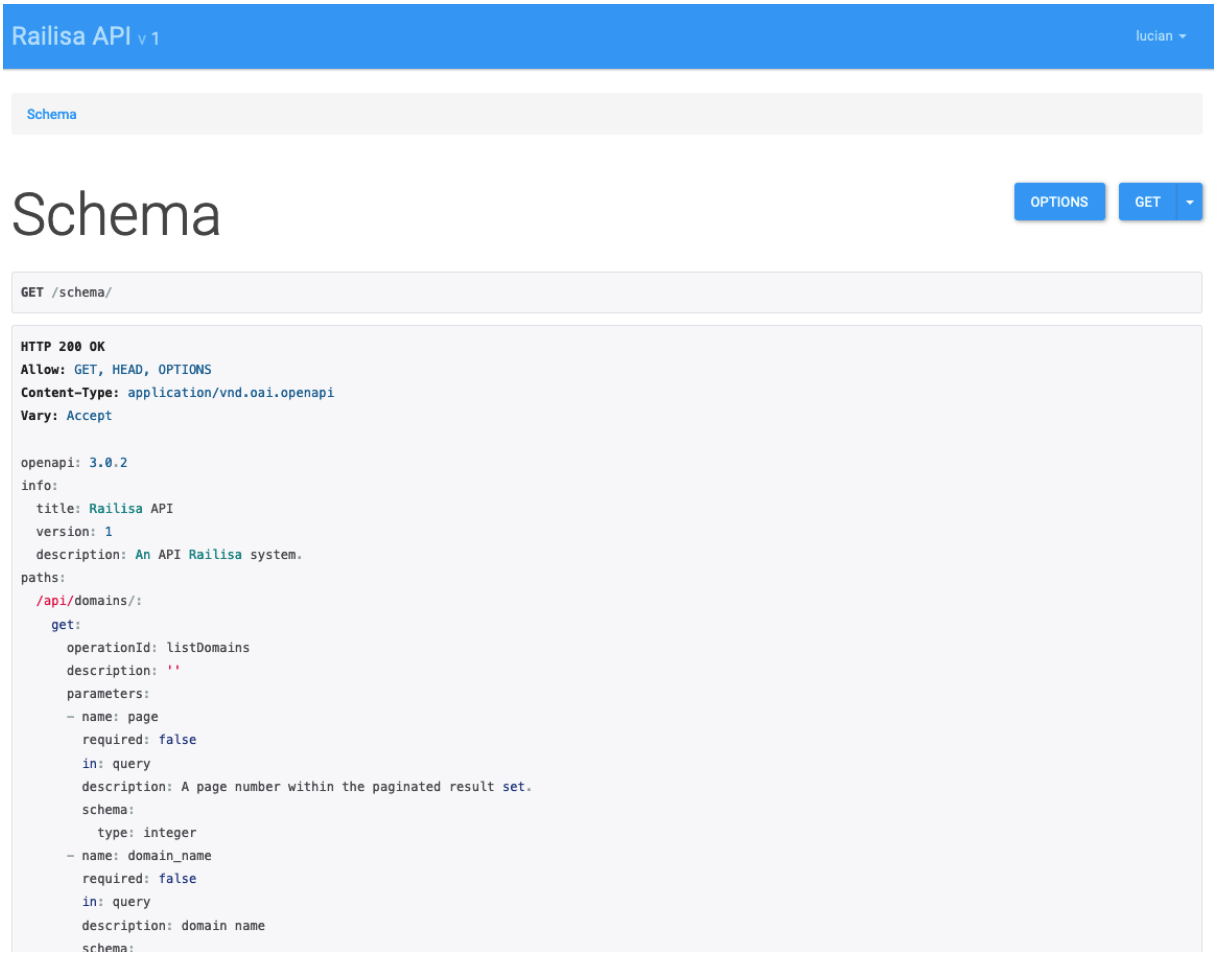
- Authentication mechanism based on Basic Authentication or Token Authentication
- Authorization mechanism based on groups permissions
- APIs for reading nomenclatures for Selections
  - List of domains
  - List of filterable variables by domain
  - List of regions
  - List of filterable countries by regions
  - List of filterable company by countries
  - List of unit
  - List of countries
- API for selections data with dynamic filtering capabilities based on APIs for reading nomenclatures for Selections
- API for CSV export based on API for selections data
- APIs for reading nomenclatures for Infographics (will be available in the next version of Rest API)
  - List of countries
  - List of filterable company by countries
  - List of filterable activities by company
- GIS API for selections data with dynamic filtering capabilities based on APIs for reading nomenclatures for Infographics

4 Open API Schema

This Rest API was developed in accordance with the specifications of [OpenAPI version 3](#).

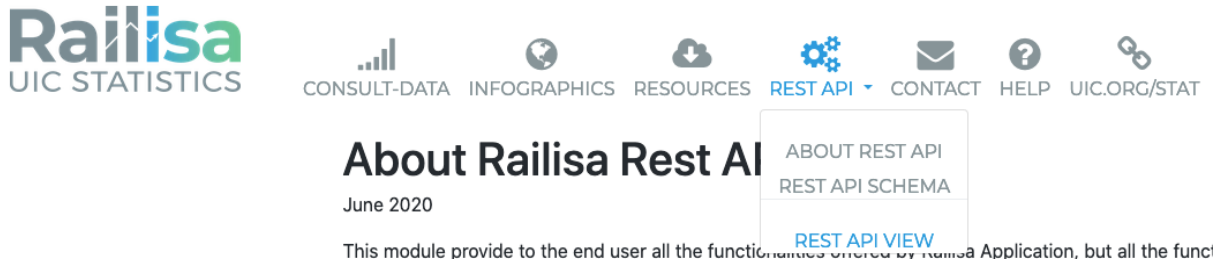
The Rest API Schema Provide the Rest API definitions. This definition can be used by documentation generation tools to display the API, code generation tools to generate servers and clients in various programming languages, testing etc.

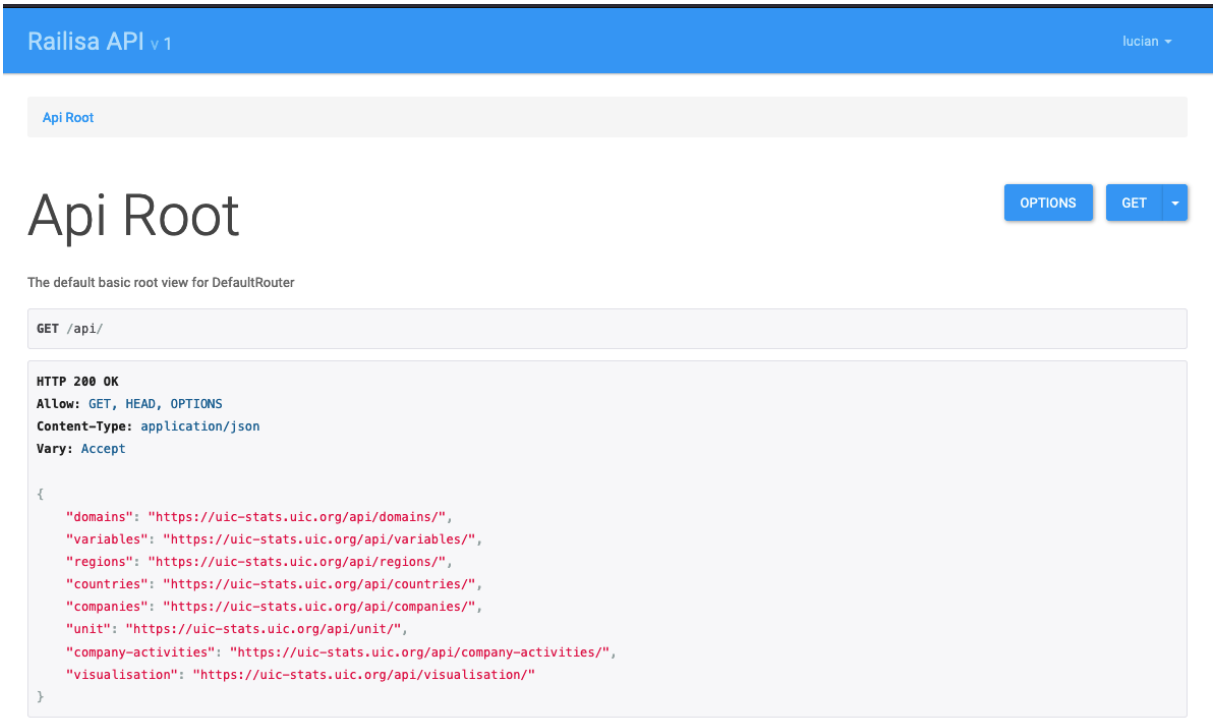




5 Rest Api View

It offers a web interface, through which you can perform queries in visual mode.
This will help you test the features offered by this Rest API.
As well as how to integrate this service in your applications.





6 Authentication mechanism based on Basic Authentication or Token Authentication

Access to the Rest API functions is only available to users registered in the system.

Rest API provides two authentication mechanisms: Basic Authentication or Token Authentication.

If you use the Basic Authentication method, the user must provide his Username and Password when calling each function called

Java Script example for use Basic Authentication:

```
var form = new FormData();
form.append("username", "test");
form.append("password", "test12345");

var settings = {
  "async": true,
  "crossDomain": true,
  "url": "https://uic-stats.uic.org/api/domains/",
  "method": "GET",
  "headers": {
    "Authorization": "Basic bHVjaWFuMjphbGU1MjE5NzM=",
    "User-Agent": "PostmanRuntime/7.19.0",
    "Accept": "*/*",
    "Cache-Control": "no-cache",
    "Postman-Token": "0f7cca40-5b18-425f-a5c9-a9b0971c4f7a,53332392-be0b-4d50-8dc7-65e9abebb64a",
    "Host": "uic-stats.uic.org",
    "Content-Type": "multipart/form-data; boundary=--------------------------156797782820618184521152",
    "Accept-Encoding": "gzip, deflate",
    "Content-Length": "286",
    "Connection": "keep-alive",
    "cache-control": "no-cache"
  },
  "processData": false,
  "contentType": false,
  "mimeType": "multipart/form-data",
  "data": form
}
```

```
28.
29.  $.ajax(settings).done(function (response) {
30.    console.log(response);
31.  });
32.
```

If you use the Token Authentication, this involves 2 steps

- Obtaining the token
- Token use when calling each function called

Java Script example for obtain Token:

```
1. var form = new FormData();
2. form.append("username", "test");
3. form.append("password", "test12345");
4.
5. var settings = {
6.   "async": true,
7.   "crossDomain": true,
8.   "url": " https://uic-stats.uic.org/api/api-token-auth/",
9.   "method": "POST",
10.    "headers": {
11.      "cache-control": "no-cache",
12.      "Postman-Token": "04655c10-4bc9-45e8-8efe-a13f02785981"
13.    },
14.    "processData": false,
15.    "contentType": false,
16.    "mimeType": "multipart/form-data",
17.    "data": form
18.  }
19.
20.  $.ajax(settings).done(function (response) {
21.    console.log(response);
22.  });
23.
```

Java Script example for use Token Authentication:

```
1. var form = new FormData();
2. form.append("username", "test");
3. form.append("password", "test12345");
4.
5. var settings = {
6.   "async": true,
7.   "crossDomain": true,
8.   "url": "https://uic-stats.uic.org/api/domains/",
9.   "method": "GET",
10.    "headers": {
11.      "Authorization": "Token tutyu567567gfhgfghj6765713gfhgfh908809",
12.      "User-Agent": "PostmanRuntime/7.19.0",
13.      "Accept": "*/*",
14.      "Cache-Control": "no-cache",
15.      "Postman-Token": "df4a65b2-50d8-4496-b5f0-fe5d604c1403,206a097a-aa01-4b16-
   a75f-f64144c9ba6f",
16.      "Host": "uic-stats.uic.org",
17.      "Content-Type": "multipart/form-data; boundary=--------------------------
   876253164551911932612168",
18.      "Accept-Encoding": "gzip, deflate",
19.      "Content-Length": "286",
20.      "Connection": "keep-alive",
21.      "cache-control": "no-cache"
```

```
  },
  "processData": false,
  "contentType": false,
  "mimeType": "multipart/form-data",
  "data": form
}

$.ajax(settings).done(function (response) {
  console.log(response);
});

```

R example for use Token Authentication:

```
# Title     : Railisa R Client for Rest API. Obtain Token for Authenticatiobn
# Objective : Demo. Haw to consuming Railisa Rest API in R.
# Created by: lucian
# Created on: 07/08/2020

#install.packages("httr")

#Require the package so you can use it
require("httr")
 #install.packages("jsonlite")

 #Require the package so you can use it
 require("jsonlite")

 #Paste_API_Username_Here. Change with your Railisa Username
 Username <- "Test"
 #Paste_API_Password_Here. Change with your Railisa password
 Password <- "test12345"

 #Base URL Railisa rest API
 token_url <- "https://uic-stats.uic.org/api/api-token-auth/"

 login <- list(
   username = Username,
   password = Password
 )

 #this directive are used because the SSL certificat on Railisa preproduction
was expired
 httr::set_config(config(ssl_verifypeer = 0L))

 token <- POST(token_url, body = login, encode = "form")

 get_token <- content(token, "text", encoding = "UTF-8")

 #Obtain Token for Authentication
 #The results are format "[1]
"{\"token\":\"tutyu567567gfhgfghj6765713gfhgfh908809\"}""
 # Token values is tutyu567567gfhgfghj6765713gfhgfh908809
 #get_token
 get_token_json <- fromJSON(get_token, flatten = TRUE)
 get_token_df <- as.data.frame(get_token_json)
 get_token_df

```

Python example for use Token Authentication:

```
 def login(username, password):
    url = 'https://uic-stats.uic.org/api/api-token-auth/'
    payload = {'username': username,
               'password': password}
```

```
    files = []
    headers = {}
    response = requests.request("POST", url, headers=headers, data=payload,
files=files, verify=ssl.CERT_NONE)
    return response.json()['token']

```

7 APIs for reading nomenclatures for Selections

7.1 List of domains

For obtain the list of domains the Rest API provide the function “Domain List”

```
Method: GET
URL: /api/domains/
Filter by (optional): domain_name (eg. /api/domains/?domain_name=Accidents)
```

JavaScript example:

```
var form = new FormData();
form.append("username", "test");
form.append("password", "test12345");

var settings = {
  "async": true,
  "crossDomain": true,
  "url": "http://uic-stats.uic.org/api/domains/?domain_name=Accidents",
  "method": "GET",
  "headers": {
    "Authorization": "Token tutyu567567gfhgfghj6765713gfhgfh908809",
    "User-Agent": "PostmanRuntime/7.19.0",
    "Accept": "*/*",
    "Cache-Control": "no-cache",
    "Postman-Token": "32473d98-e0eb-4731-b95a-1f293ef412ef,e641d27c-07d4-4ad1-
89d2-51a97d89344d",
    "Host": "127.0.0.1:8000",
    "Content-Type": "multipart/form-data; boundary=--------------------------
286063985509474678866833",
    "Accept-Encoding": "gzip, deflate",
    "Content-Length": "286",
    "Connection": "keep-alive",
    "cache-control": "no-cache"
  },
  "processData": false,
  "contentType": false,
  "mimeType": "multipart/form-data",
  "data": form
}

$.ajax(settings).done(function (response) {
  console.log(response);
});

```

Also, this function can be executed by Rest API View (see chapter 5)

R example:

```
 #Require the package so you can use it
require("httr")
#install.packages("jsonlite")
```

```
4.
5.  #Require the package so you can use it
6.  require("jsonlite")
7.
8.  require("dplyr")
9.
10.   # Required to run Loghin.R for obtain Token and paset here
11.   Token <- "tutyu567567gfhgfghj6765713gfhgfh908809"
12.   #this directive are used because the SSL certificat on Railisa preproduction
    was expired
13.   httr::set_config(config(ssl_verifypeer = 0L))
14.
15.   #Obtain Domain List
16.   api_url_1 <- "https://uic-stats.uic.org/api/domains"
17.   get_domain <- GET(api_url_1, add_headers(Authorization = paste("Token",
    Token)))
18.   get_domain_text <- content(get_domain, "text", encoding = "UTF-8")
19.   get_domain_json <- fromJSON(get_domain_text, flatten = FALSE)
20.   get_domain_df <- as.data.frame(get_domain_json[4]$results)
21.   message("Domain List")
22.   get_domain_df
```

Python example:

```
1.   def getDomain(token):
2.       url = 'https://uic-stats.uic.org/api/domains/'
3.       headers = {
4.           'Authorization': 'Token ' + token
5.       }
6.       response = requests.request("GET", url, headers=headers,
    verify=ssl.CERT_NONE)
7.       return response.json()
8.
```

7.2 List of filterable variables by domain

For obtain the list of variables the Rest API provide the function “Variable List”

```
Method: GET
URL: /api/ variables/
Filter by (optional): domain_id, variable_id, variable_name
(eg. /api/variables?domain_id=FRET&variable_id=6105&variable_name=Revenue-earning
freight traffic on the national territory - Full+wagonloads - total number of tonnes)
```

JavaScript example:

```
1. var form = new FormData();
2. form.append("username", "test");
3. form.append("password", "test12345");
4.
5. var settings = {
6.   "async": true,
7.   "crossDomain": true,
8.   "url": "http://uic-stats.uic.org/api/variables/?domain_id
    =FRET&variable_id=6105&variable_name =Revenue-
    earning%20freight%20traffic%20on%20the%20national%20territory%20-
    %20Full%20wagonloads%20-%20total%20number%20of%20tonnes",
9.   "method": "GET",
10.    "headers": {
11.      "Authorization": "Token tutyu567567gfhgfghj6765713gfhgfh908809",
12.      "User-Agent": "PostmanRuntime/7.19.0",
13.      "Accept": "*/*",
14.      "Cache-Control": "no-cache",
```

```
      "Postman-Token": "97012ec2-4058-4da3-898f-517fa1051e8e,964afece-10e0-402f-b53b-22ffe08a6e14",
      "Host": "uic-stats.uic.org",
      "Content-Type": "multipart/form-data; boundary=--------------------------782184182105230076277231",
      "Accept-Encoding": "gzip, deflate",
      "Content-Length": "286",
      "Connection": "keep-alive",
      "cache-control": "no-cache"
    },
    "processData": false,
    "contentType": false,
    "mimeType": "multipart/form-data",
    "data": form
  }

  $.ajax(settings).done(function (response) {
    console.log(response);
  });

```

Also, this function can be executed by Rest API View (see chapter 5)

R example:

```
 #Obtain Variable List
## set parameter Domain ID. The list of Domain ID can be obtained by get_domain_df Eg. ACCID

Dom_ID <- "ACCID"
api_url_2 <- "https://uic-stats.uic.org//api/variables/"
call_0 <- paste0(api_url_2, "?", "domain_id", "=", Dom_ID)
Items <- GET(call_0,add_headers(Authorization = paste("Token", Token)))
Items_text <- content(Items, "text", encoding = "UTF-8")
Items_json <- fromJSON(Items_text, flatten = TRUE)

 count <- Items_json[1]$count
 get_variable_json <- Items_json[4]$results
 get_variable_df <- as.data.frame(get_variable_json)
 pages <- round(count/50)
 for(i in 2:pages){
   call_1 <- paste0(api_url_2, "?", "domain_id", "=", Dom_ID, "&", "page", "=", i)
   get_variable_2 <- GET(call_1,add_headers(Authorization = paste("Token", Token)))
   get_variable_2_text <- content(get_variable_2, "text", encoding = "UTF-8")
   get_variable_2_json <- fromJSON(get_variable_2_text)
   get_variable_2_df <- as.data.frame(get_variable_2_json[4]$results)
   get_variable_df <- rbind(get_variable_df, get_variable_2_df)
 }
 message("Variable List")
 get_variable_df
```

Python example:

```
 def getVariable(dom_id, token):
    url = 'https://uic-stats.uic.org/api/variables/?domain_id=' + dom_id
    headers = {
        'Authorization': 'Token ' + token
    }
    results = {}
    results['results'] = []
    response = requests.request("GET", url, headers=headers, verify=ssl.CERT_NONE)
```

```
    raw = response.json()

    for i in raw['results']:
        results['results'].append(i)

    pg = int(raw['count'] / 50) + 1
    p = 2
    while p <= pg:
        try:
            r = requests.request("GET", url + '&page=' + str(p),
 headers=headers, verify=ssl.CERT_NONE)
            raw2 = r.json()

            for j in raw2['results']:
                results['results'].append(j)
        finally:
            p += 1

    return results

```

7.3 List of regions

For obtain the list of regions the Rest API provide the function “Region List”

```
Method: GET
URL: /api/regions/
Filter by (optional): region_name (eg. /api/regions/?region_name=Africa)
```

JavaScript example:

```
var form = new FormData();
form.append("username", "test");
form.append("password", "test12345");

var settings = {
  "async": true,
  "crossDomain": true,
  "url": "https://uic-stats.uic.org/api/regions/?region_name=Africa",
  "method": "GET",
  "headers": {
    "Authorization": "Token tutyu567567gfhgfghj6765713gfhgfh908809",
    "User-Agent": "PostmanRuntime/7.19.0",
    "Accept": "*/*",
    "Cache-Control": "no-cache",
    "Postman-Token": "c1d2c71d-a511-42dc-bf8b-ddda54797c12,c5c5d377-cef8-4a15-
 9a61-1c0400895e05",
    "Host": "uic-stats.uic.org ",
    "Content-Type": "multipart/form-data; boundary=--------------------------
 418282051346309597066817",
    "Accept-Encoding": "gzip, deflate",
    "Content-Length": "286",
    "Connection": "keep-alive",
    "cache-control": "no-cache"
  },
  "processData": false,
  "contentType": false,
  "mimeType": "multipart/form-data",
  "data": form
}

$.ajax(settings).done(function (response) {
  console.log(response);
});

```

Also, this function can be executed by Rest API View (see chapter 5)

R example:

```r
#Obtain Region List
api_url_3 <- "https://uic-stats.uic.org/api/regions"
get_regions <- GET(api_url_3, add_headers(Authorization = paste("Token", Token)))
get_regions_text <- content(get_regions, "text", encoding = "UTF-8")
get_regions_json <- fromJSON(get_regions_text, flatten = FALSE)
get_regions_df <- as.data.frame(get_regions_json[4]$results)
message("Region List")
get_regions_df
```

Python example:

```python
def getRegion(token):
    url = 'https://uic-stats.uic.org/api/regions/'
    headers = {
        'Authorization': 'Token ' + token
    }
    response = requests.request("GET", url, headers=headers, verify=ssl.CERT_NONE)
    return response.json()
```

7.4 List of filterable countries by regions

For obtain the list of countries the Rest API provide the function “Country List”

```
Method: GET
URL: /api/countries/
Filter by (optional): region_id (eg. /api/countries/?region_id=AF_C)
```

JavaScript example:

```javascript
var form = new FormData();
form.append("username", "test");
form.append("password", "test12345");

var settings = {
  "async": true,
  "crossDomain": true,
  "url": "http://uic-stats.uic.org/api/countries/?region_id=AF_C",
  "method": "GET",
  "headers": {
    "Authorization": "Token tutyu567567gfhgfghj6765713gfhgfh908809",
    "User-Agent": "PostmanRuntime/7.19.0",
    "Accept": "*/*",
    "Cache-Control": "no-cache",
    "Postman-Token": "2dbd9986-df03-4459-8efe-aad4121377e3,f31c1fae-a085-4f0d-8aaa-ba3d6e96cce3",
    "Host": "uic-stats.uic.org",
    "Content-Type": "multipart/form-data; boundary=--------------------------267042938833963093941861",
    "Accept-Encoding": "gzip, deflate",
    "Content-Length": "286",
    "Connection": "keep-alive",
    "cache-control": "no-cache"
  },
  "processData": false,
```

```
24.    "contentType": false,
25.    "mimeType": "multipart/form-data",
26.    "data": form
27.  }
28.
29.  $.ajax(settings).done(function (response) {
30.    console.log(response);
31.  });
32.
```

Also, this function can be executed by Rest API View (see chapter 5)

R example:

```
1.   #Obtain Country List
2. # set parameter Region ID. The list of Region ID can be obtained by
   get_regions_df Eg. AF_C
3. Rgn_ID <- ""
4. api_url_4 <- "https://uic-stats.uic.org//api/countries/"
5. call_4 <- paste0(api_url_4, "?", "region_id", "=", Rgn_ID)
6. Items4 <- GET(call_4,add_headers(Authorization = paste("Token", Token)))
7. Items4_text <- content(Items4, "text", encoding = "UTF-8")
8. Items4_json <- fromJSON(Items4_text, flatten = TRUE)
9.
10.  count <- Items4_json[1]$count
11.  get_countries_json <- Items4_json[4]$results
12.  get_countries_df <- as.data.frame(get_countries_json)
13.  pages <- round(count/50)
14.  for(i in 2:pages){
15.    call_5 <- paste0(api_url_4, "?", "region_id", "=", Rgn_ID, "&", "page", "=",
   i)
16.    get_countries_2 <- GET(call_5,add_headers(Authorization = paste("Token",
   Token)))
17.    get_countries_2_text <- content(get_countries_2, "text", encoding = "UTF-8")
18.    get_countries_2_json <- fromJSON(get_countries_2_text)
19.    get_countries_2_df <- as.data.frame(get_countries_2_json[4]$results)
20.    get_countries_df <- rbind(get_countries_df, get_countries_2_df)
21.  }
22.  message("Countries List")
23.  get_countries_df
```

Python example:

```
1.   def getCountry(rgn_id, token):
2.      url = 'https://uic-stats.uic.org/api/countries/?region_id=' + rgn_id
3.      headers = {
4.          'Authorization': 'Token ' + token
5.      }
6.      results = {}
7.      results['results'] = []
8.      response = requests.request("GET", url, headers=headers,
   verify=ssl.CERT_NONE)
9.      raw = response.json()
10.
11.       for i in raw['results']:
12.           results['results'].append(i)
13.
14.       pg = int(raw['count'] / 50) + 1
15.       p = 2
16.
17.       while p <= pg:
18.           try:
19.               r = requests.request("GET", url + '&page=' + str(p),
   headers=headers, verify=ssl.CERT_NONE)
20.               raw2 = r.json()
```

```
            for j in raw2['results']:
                results['results'].append(j)
        finally:
            p += 1
    return results
```

7.5 List of filterable company by countries

For obtain the list of companies the Rest API provide the function “Company List”

```
Method: GET
URL: /api/companies/
Filter by (optional): country_id, company_name (eg. /api/companies/? country_id=DZ& company_name=SNTF)
```

JavaScript example:

```
var form = new FormData();
form.append("username", "test");
form.append("password", "test12345");

var settings = {
  "async": true,
  "crossDomain": true,
  "url": "http://uic-stats.uic.org/api/companies/?country_id=DZ&company_name=SNTF",
  "method": "GET",
  "headers": {
    "Authorization": "Token tutyu567567gfhgfghj6765713gfhgfh908809",
    "User-Agent": "PostmanRuntime/7.19.0",
    "Accept": "*/*",
    "Cache-Control": "no-cache",
    "Postman-Token": "1a72c877-a5e7-40d8-9687-2fe2e519235e,f19d7c45-5c20-49ee-8ffb-a15461e316cb",
    "Host": "uic-stats.uic.org",
    "Content-Type": "multipart/form-data; boundary=--------------------------204517922753159705986767",
    "Accept-Encoding": "gzip, deflate",
    "Content-Length": "286",
    "Connection": "keep-alive",
    "cache-control": "no-cache"
  },
  "processData": false,
  "contentType": false,
  "mimeType": "multipart/form-data",
  "data": form
}

$.ajax(settings).done(function (response) {
  console.log(response);
});
```

Also, this function can be executed by Rest API View (see chapter 5)

R example:

```
 #Obtain Company List
# set parameter Country ID. The list of Country ID can be obtained by get_countries_df Eg. DE
Ctry_ID <- ""
api_url_6 <- "https://uic-stats.uic.org//api/companies/"
```

```r
call_6 <- paste0(api_url_6, "?", "country_id", "=", Ctry_ID)
Items6 <- GET(call_6,add_headers(Authorization = paste("Token", Token)))
Items6_text <- content(Items6, "text", encoding = "UTF-8")
Items6_json <- fromJSON(Items6_text, flatten = TRUE)

 count <- Items6_json[1]$count
 get_companies_json <- Items6_json[4]$results
 get_companies_df <- as.data.frame(get_companies_json)
 pages <- round(count/50)
 for(i in 2:pages){
   call_7 <- paste0(api_url_6, "?", "country_id", "=", Ctry_ID, "page", "=", i)
   get_companies_2 <- GET(call_7,add_headers(Authorization = paste("Token", Token)))
   get_companies_2_text <- content(get_companies_2, "text", encoding = "UTF-8")
   get_companies_2_json <- fromJSON(get_companies_2_text)
   get_companies_2_df <- as.data.frame(get_companies_2_json[4])
   get_companies_df <- rbind(get_companies_df, get_companies_2_df)
 }
 message("Company List")
 get_companies_df

```

Python example:

```python
 def getCompany(ctry_id, token):
    url = 'https://uic-stats.uic.org/api/companies/?country_id' + ctry_id
    headers = {
        'Authorization': 'Token ' + token
    }
    results = {}
    results['results'] = []
    response = requests.request("GET", url, headers=headers, verify=ssl.CERT_NONE)
    raw = response.json()

     for i in raw['results']:
         results['results'].append(i)

     pg = int(raw['count'] / 50) + 1
     print("start call " + str(pg) + "API pages")
     p = 2

     print("Page 1 loaded")

     while p <= pg:
         print("Page " + str(p) + " loaded")
         try:
             r = requests.request("GET", url + '&page=' + str(p), headers=headers, verify=ssl.CERT_NONE)
             raw2 = r.json()
             for j in raw2['results']:
                 results['results'].append(j)
         finally:
             p += 1
     return results
```

7.6 List of activities

For obtain the list of activities the Rest API provide the function “Activity List”

```
Method: GET
URL: /api/activities/
Filter by (optional): activity_name (eg. /api/activities/?activity_name= Freight Operator)
```

JavaScript example:

```
var form = new FormData();
form.append("username", "test");
form.append("password", "test12345");

var settings = {
  "async": true,
  "crossDomain": true,
  "url": "https://uic-stats.uic.org/api/activities/?activity_name=Freight Operator",
  "method": "GET",
  "headers": {
    "Authorization": "Token tutyu567567gfhgfghj6765713gfhgfh908809",
    "User-Agent": "PostmanRuntime/7.19.0",
    "Accept": "*/*",
    "Cache-Control": "no-cache",
    "Postman-Token": "c1d2c71d-a511-42dc-bf8b-ddda54797c12,c5c5d377-cef8-4a15-9a61-1c0400895e05",
    "Host": "uic-stats.uic.org ",
    "Content-Type": "multipart/form-data; boundary=--------------------------418282051346309597066817",
    "Accept-Encoding": "gzip, deflate",
    "Content-Length": "286",
    "Connection": "keep-alive",
    "cache-control": "no-cache"
  },
  "processData": false,
  "contentType": false,
  "mimeType": "multipart/form-data",
  "data": form
}

$.ajax(settings).done(function (response) {
  console.log(response);
});

```

Also, this function can be executed by Rest API View (see chapter 5)

R example:

```
#Obtain Activity List
api_url_3 <- "https://uic-stats.uic.org/api/activities"
get_activity <- GET(api_url_3, add_headers(Authorization = paste("Token", Token)))
get_activity_text <- content(get_activity, "text", encoding = "UTF-8")
get_activity_json <- fromJSON(get_activity_text, flatten = FALSE)
get_activity_df <- as.data.frame(get_activity_json[4]$results)
message("Activity List")
get_regions_df
```

Python example:

```
def getActivity(token):
    url = 'https://uic-stats.uic.org/api/activities'
    headers = {
        'Authorization': 'Token ' + token
    }
    response = requests.request("GET", url, headers=headers, verify=ssl.CERT_NONE)
    return response.json()
```

7.7 List of unit

For obtain the list of units the Rest API provide the function “Unit List”

```
Method: GET
URL: /api/unit/
Filter by (optional): unit_name (eg. /api/unit/?unit_name=cubic metre)
```

JavaScript example:

```
var form = new FormData();
form.append("username", "test");
form.append("password", "test12345");

var settings = {
  "async": true,
  "crossDomain": true,
  "url": "https://uic-stats.uic.org/api/unit/?unit_name=cubic metre",
  "method": "GET",
  "headers": {
    "Authorization": "Token tutyu567567gfhgfghj6765713gfhgfh908809",
    "User-Agent": "PostmanRuntime/7.19.0",
    "Accept": "*/*",
    "Cache-Control": "no-cache",
    "Postman-Token": "c1d2c71d-a511-42dc-bf8b-ddda54797c12,c5c5d377-cef8-4a15-9a61-1c0400895e05",
    "Host": "uic-stats.uic.org ",
    "Content-Type": "multipart/form-data; boundary=--------------------------418282051346309597066817",
    "Accept-Encoding": "gzip, deflate",
    "Content-Length": "286",
    "Connection": "keep-alive",
    "cache-control": "no-cache"
  },
  "processData": false,
  "contentType": false,
  "mimeType": "multipart/form-data",
  "data": form
}

$.ajax(settings).done(function (response) {
  console.log(response);
});

```

Also, this function can be executed by Rest API View (see chapter 5)

R example:

```
 #Obtain Unit List
api_url_3 <- "https://uic-stats.uic.org/api/unit"
get_unit <- GET(api_url_3, add_headers(Authorization = paste("Token", Token)))
get_unit_text <- content(get_unit, "text", encoding = "UTF-8")
get_unit_json <- fromJSON(get_unit_text, flatten = FALSE)
get_unit_df <- as.data.frame(get_unit_json[4]$results)
message("Unit List")
get_regions_df
```

Python example:

```
 def getUnit(token):
```

```
16.      url = 'https://uic-stats.uic.org/api/unit'
17.      headers = {
18.          'Authorization': 'Token' + token
19.      }
20.      response = requests.request("GET", url, headers=headers,
   verify=ssl.CERT_NONE)
```

7.8 List of company activity by company

8 API for selections data with dynamic filtering capabilities

This function is representations of "Selection View" by Railisa web.
For obtain selection result the Rest API provide the function "Visualization List"

```
Method: GET
URL: /api/visualisation/
Filter by (optional): companies, regions, countries, variables, max_year, min_year,
value_visibility, value_last_update, unit_id, domain_id (eg.
/api/visualisation/?companies=RFF,CFR&regions=EUR_C&countries=RO,FR&variables=1004,1110
&min_year=1995&max_year=2018&value_visibility=1&value_last_update=2012-11-
26&unit_id=4&domain_id=INFRA)
```

Note:

```
Variables = it is a composite get parameter represented by list of company of
variable_id separated by ,
Companies = it is a composite get parameter represented by list of company company_name
separated by ,
Countries = it is a composite get parameter represented by list of country country_id
separated by ,
Visibility = it is level of visibility (1=Public, 2=Public + Member, 3=Member)
```

JavaScript example:

```
1. var form = new FormData();
2. form.append("username", "test");
3. form.append("password", "test12345");
4.
5. var settings = {
6.   "async": true,
7.   "crossDomain": true,
8.   "url": "http://uic-
   stats.uic.org//api/visualisation/?companies=RFF,CFR&regions=EUR_C&countries=RO,FR
   &variables=1004,1110&min_year=1995&max_year=2018&value_visibility=1&value_last_up
   date=2012-11-26&unit_id=4&domain_id=INFRA",
9.   "method": "GET",
10.    "headers": {
11.      "Authorization": "Token tutyu567567gfhgfghj6765713gfhgfh908809",
12.      "User-Agent": "PostmanRuntime/7.19.0",
13.      "Accept": "*/*",
14.      "Cache-Control": "no-cache",
15.      "Postman-Token": "182c698d-4805-4cfc-950c-74656a654174,6402153b-73ca-426d-
   80f9-2db5f8db7246",
16.      "Host": "uic-stats.uic.org",
17.      "Content-Type": "multipart/form-data; boundary=--------------------------
   085594795765079419433806",
18.      "Accept-Encoding": "gzip, deflate",
19.      "Content-Length": "286",
20.      "Connection": "keep-alive",
21.      "cache-control": "no-cache"
22.    },
23.    "processData": false,
24.    "contentType": false,
```

```
  "mimeType": "multipart/form-data",
  "data": form
}

$.ajax(settings).done(function (response) {
  console.log(response);
});

```

Also, this function can be executed by Rest API View (see chapter 5)

R example:

```
# Title     : Railisa R Client for Rest API
# Objective : Demo. Haw to consuming Railisa Rest API in R
# Created by: lucian
# Created on:30/08/2021

#install.packages("httr")

#Require the package so you can use it
require("httr")
 #install.packages("jsonlite")

 #Require the package so you can use it
 require("jsonlite")

 # Required to run Loghin.R for obtain Token and paset here
 Token <- "tutyu567567gfhgfghj6765713gfhgfh908809"
 #this directive are used because the SSL certificat on Railisa preproduction was expired
 httr::set_config(config(ssl_verifypeer = 0L))

 ## set parameters
 ### Variables (variable ID) Eg. 1110,2306
 Var_ID <- ""

 ### Domain (domain ID) Eg. INFRA
 Dom_ID <- ""

 ### Unit (unit ID) Eg. 4
 Unit_ID <- ""


 ## min_year
 Min_year <- "2018"

 ## max_year
 Max_year <- "2018"

 # countries (list of countries ID separaded by , ) Eg. FR,DE
 Countries <- "IT"

 # regions (list of region ID separaded by , ) Eg. EUR_C,AF_C
 Regions <- "EUR_C"

 # companies (list of company ID separaded by , ) Eg. EUROTUNNEL,SNCF,AAE,DB
 Companies <- ""

 # visibility (level ov visibility) Eg. 1 - only Public, 2 - Mamber and Public, 3 - only Member
 Visibility <- ""

 ## Value Last Uodate
 Val_Last_Upd <- "2018"

 api_url <- "https://uic-stats.uic.org/api/visualisation"
```

```
call_0 <- paste0(api_url, "?", "variables", "=", Var_ID, "&", "min_year", "=", Min_year, "&", "max_year", "=", Max_year, "&", "countries", "=", Countries, "&", "companies", "=", Companies, "&", "value_visibility", "=", Visibility, "&", "value_last_update", "=", Val_Last_Upd, "&", "regions", "=", Regions, "&", "unit_id", "=", Unit_ID, "&", "domain_id", "=", Dom_ID)
Items <- GET(call_0, add_headers(Authorization = paste("Token", Token)))
Items_text <- content(Items, "text", encoding = "UTF-8")
Items_json <- fromJSON(Items_text, flatten = TRUE)

count <- Items_json[1]$count
pages <- ceiling(count/50)

get_selections_json <- Items_json[4]$results
get_selections_df <- as.data.frame(get_selections_json)
if (pages > 1) {
  for(i in 2:pages){
    call_1 <- paste0(api_url, "?", "variables", "=", Var_ID, "&", "min_year", "=", Min_year, "&", "max_year", "=", Max_year, "&", "countries", "=", Countries, "&", "companies", "=", Companies, "&", "value_visibility", "=", Visibility, "&", "value_last_update", "=", Val_Last_Upd, "&", "regions", "=", Regions, "&", "unit_id", "=", Unit_ID, "&", "domain_id", "=", Dom_ID, "&", "page", "=", i)
    Items2 <- GET(call_1, add_headers(Authorization = paste("Token", Token)))
    Items2_text <- content(Items2, "text", encoding = "UTF-8")
    Items2_json <- fromJSON(Items2_text, flatten = TRUE)
    get_selections2_json <- Items2_json[4]$results
    get_selections2_df <- as.data.frame(get_selections2_json)
    get_selections_df <- rbind(get_selections_df, get_selections2_df)
  }
}
get_selections_df

```

Python example:

```
def getSelection(var_id, min_year, max_year, countries, regions, companies, visibility, value_last_update, unit_id, domain_id, token):
    url = 'https://uic-stats.uic.org//api/visualisation/?variables='+var_id+'&min_year='+min_year+'&max_year='+max_year+'&countries='+ countries +'&companies=' + companies + '&value_visibility=' + visibility + '&value_last_update =' + value_last_update + '&unit_id=' + unit_id + '&domain_id=' + domain_id
    headers = {
        'Authorization': 'Token ' + token
    }
    results = {}
    results['results'] = []
    response = requests.request("GET", url, headers=headers, verify=ssl.CERT_NONE)
    raw = response.json()

    for i in raw['results']:
        results['results'].append(i)

    pg = int(raw['count'] / 50) + 1
    p = 2

    while p <= pg:
        try:
            r = requests.request("GET", url + '&page=' + str(p), headers=headers, verify=ssl.CERT_NONE)
            raw2 = r.json()
            for j in raw2['results']:
                results['results'].append(j)
        finally:
            p += 1
    return results

```

9 API for CSV export based on API for selections data

This function is representations of “Download View” by Railisa web.
For obtain selection result the Rest API provide the function “CSV export of Visualization List”

```
Method: GET
URL: /api/download/
Filter by (optional): companies, regions, countries, variables, max_year, min_year,
value_visibility, value_last_update, unit_id, domain_id (eg. /api/
download/?companies=RFF,CFR&regions=EUR_C&countries=RO,FR&variables=1004,1110&min_year=
1995&max_year=2018&value_visibility=1&value_last_update=2012-11-
26&unit_id=4&domain_id=INFRA)
```

Note:

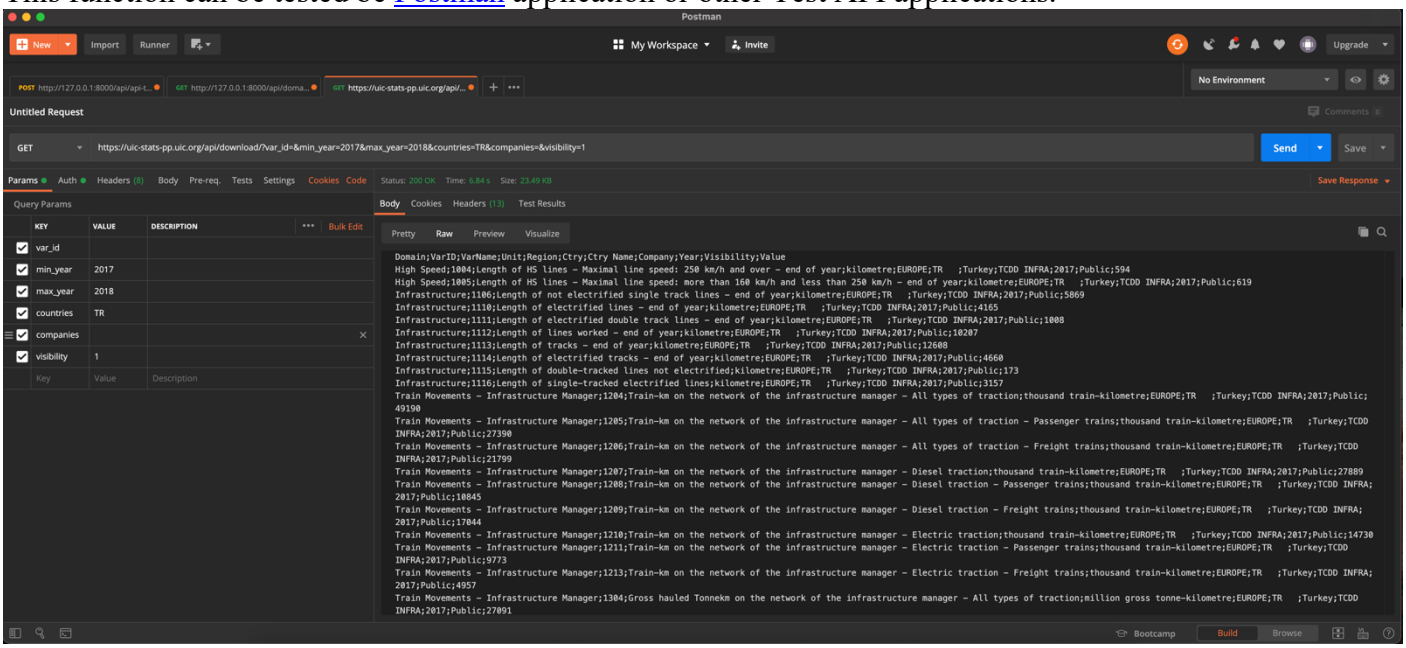
```
Variables = it is a composite get parameter represented by list of company of
variable_id separated by ,
Companies = it is a composite get parameter represented by list of company company_name
separated by ,
Countries = it is a composite get parameter represented by list of country country_id
separated by ,
Visibility = it is level of visibility (1=Public, 2=Public + Member, 3=Member)
```

JavaScript example:

```
1. var form = new FormData();
2. form.append("username", "test");
3. form.append("password", "test12345");
4.
5. var settings = {
6.   "async": true,
7.   "crossDomain": true,
8.   "url": "http://uic-
   stats.uic.org//api/visualisation/?companies=RFF,CFR&regions=EUR_C&countries=RO,FR
   &variables=1004,1110&min_year=1995&max_year=2018&value_visibility=1&value_last_up
   date=2012-11-26&unit_id=4&domain_id=INFRA",
9.   "method": "GET",
10.    "headers": {
11.      "Authorization": "Token tutyu567567gfhgfghj6765713gfhgfh908809",
12.      "User-Agent": "PostmanRuntime/7.19.0",
13.      "Accept": "*/*",
14.      "Cache-Control": "no-cache",
15.      "Postman-Token": "182c698d-4805-4cfc-950c-74656a654174,6402153b-73ca-426d-
   80f9-2db5f8db7246",
16.      "Host": "uic-stats.uic.org",
17.      "Content-Type": "multipart/form-data; boundary=--------------------------
   085594795765079419433806",
18.      "Accept-Encoding": "gzip, deflate",
19.      "Content-Length": "286",
20.      "Connection": "keep-alive",
21.      "cache-control": "no-cache"
22.    },
23.    "processData": false,
24.    "contentType": false,
25.    "mimeType": "multipart/form-data",
26.    "data": form
27.  }
28.
29.  $.ajax(settings).done(function (response) {
30.    console.log(response);
31.  });
32.
33.
```

Python example:

```
1.  import requests
2.
3. url = "http://uic-
   stats.uic.org//api/visualisation/?companies=RFF,CFR&regions=EUR_C&countries=RO,FR
   &variables=1004,1110&min_year=1995&max_year=2018&value_visibility=1&value_last_up
   date=2012-11-26&unit_id=4&domain_id=INFRA"
4.
5. payload = {}
6. headers = {
7.   'Authorization': 'Token tutyu567567gfhgfghj6765713gfhgfh908809'
8. }
9.
10.  response = requests.request("GET", url, headers=headers, data = payload)
11.
12.  print(response.text.encode('utf8'))
13.
```

This function can't be executed by Rest API View because the result is in CSV format, and this result can't be rendered by web browser.

This function can be tested be Postman application or other Test API applications.