Pre step

If you don't have Anaconda you must install it! This is a Jupyter notebook. Jupyter is one of the programs that come in Anaconda. Also, Jupyter runs locally, so you need all the files in the folder "Follow up" in a local directory. When you save images or read files it will be where this file is located. For example:

C:\Users\unsd.intern5.UNHQ\Documents\First_rep\Follow-up\Follow-up clean

Some tips

- If something doesn't run, check the line where the indication of the error is and run that separately. This will help identify the problem easier.
- StackOverflow and similar pages with questions from people are your friends! Try to define your doubt as specifically as possible and type that in Google. You can write something like *split string by pattern in python* or *make a list of lists into a list of elements* or stuff like this. It is very helpful!
- Never blame Python, it is always a mistake you did. At least 99.99% of the time.
- If desperate, ask Luis Gonzalez or Hernan Hernandez!

Updating the json file with the information of the decisions

In this file we will add to the json file the new decisions of the past session

- you will need the latest document with the decisions in the json format
- you will ad the information of the new session
- the topic attribute or key will be blank because this part is manual
- it will produce a csv to read in excel and classify

To run a chunk or cell of code, make sure you are in it (you can type or click) and press ctrl + enter

There are two type of cells in this notebook, the 'code' and the 'markdown'.

- The code cells are the ones with python code on them
- The markdown cells have text and you can format them nicer

They are both runned the same way (ctrl + enter)

In [4]:
```
# https://volderette.de/jupyter-notebook-tip-multiple-outputs/
from IPython.core.interactiveshell import InteractiveShell
InteractiveShell.ast_node_interactivity = "all"
#packages needed
import tika
from tika import parser
import re
import os
import json
```

Read the file with the information we already have

In this case we are reading the file with the decisions we have (from the 37-50 sessions). The file's name is 'decisions.json' This space is meant to read the latest file (meaning it is supposed to be changed on every follow up) that has the information of the decisions. Let's take a look at the structure

The information contained by decision is:

- code: identifier of the decision
- title: assigned title in the report
- session: the number of the session with the year of the session
- report_link: link to the report's PDF
- year: year of the session
- chapter of the report that contains the decision
- section of the report that contains the decision
- page of the report that contains the decision
- desc: text that describes the decision
- keys: keywords that are explicit in the text
- topic: related to the title
- main_keys: related to the Classification of International Statistical Activities
- classification: Domain of the Classification of International Statistical Activities

```
In [5]: decs = json.loads(open('decisions.json').read())
```

This is only for this example, if a new document is to be added then don't run this chunk!!
Let's erase the decisions from the 50th Session!

```
In [26]: decs=decs[:209]
```

Continue, let's look at the structure of the decisions characteristics

```
In [3]: decs[0] #this will have as an output the first decision of the document
```

```
Out[3]: {'code': '37/101',
         'title': 'Programme review: industrial statistics',
         'session': '37th Session (2006)',
         'report_link': 'https://unstats.un.org/unsd/statcom/37th-session/documents/sta
        tcom-2006-37th-report-E.pdf',
         'year': 2006,
         'chapter': 'I',
         'section': 'C',
         'page': '7',
         'desc': 'The Statistical Commission:<br><br>(a) Welcomed the report of the pro
        gramme reviewer on industrial statistics and noted its appreciation of the work
        carried out by Japan;<br><br>(b) Agreed with the recommendations set out in the
        report relating to data collection standards, data dissemination standards, tra
        ining and capacity-building and international coordination;<br><br>(c) Endorsed
        the work carried out by the United Nations Statistics Division on the revision
        of statistical standards, for the recommendations for industrial statistics and
        index numbers of industrial production;<br><br>(d) Requested the Division to pr
        epare a position paper on the above-mentioned recommendations, describing insti
        tutional arrangements, deliverables, timetables and consequences of implementin
        g the recommendations, and to submit the paper to the Statistical Commission at
        its thirty-eighth session;<br><br>(e) Noted that the integration of industrial
        statistics with other statistics, such as services statistics, needed to be imp
        roved in that process, and supported the creation of an integrated economic sta
        tistics programme and, as a first step, proposed the preparation of a concept p
        aper for further discussion under item 3 (c) of the agenda.',
         'keys': ['data collection',
          'data dissemination',
          'standards',
          'training',
          'capacity-building',
          'industrial production',
          'economic statistics',
          'services statistics',
          'statistics programme'],
         'topic': 'Industry',
         'main_keys': ['business',
          'prices',
          'data sources',
          'data dissemination',
          'data warehousing',
          'official statistics',
          'statistical systems',
          'training',
          'development of human resources',
          'capacity building',
          'technical cooperation'],
         'classification': 'Economic statistics'}
```

In this code we are going to simulate the process for reading and extracting the information for the last Session's document (in this case the 50th session)

In the next chunk, the changeable part is the name of the **word document** in the

```
parsed = parser.from_file('50_session.doc')
```

It is to be changed into the name of the word document of the session that is being added.

Here are the patterns that go with the format of the Stats Com reports

Pattern for the decisions

```
dec = re.compile('(\d{2}\/\d{3}\s+[A-Z])')
```

This pattern looks for two digits, a slash, three digits, one or more spaces, and a capital letter

Pattern for the beginning of the text that describes the decision

```
start = re.compile('Decisions brought to the attention of the Council')
```

The text that follows the description of the decisions

```
end = re.compile('Chapter\s+II\s+Items for discussion and decision')
```

Mark for the beginning of the Decisions section in the Contents table

```
start0 = re.compile('[A-Z]\.\s+Decisions brought to the attention of the
Council')
```

End of the decisions part in the contents table

```
end0 =re.compile('II\.\s+Items for discussion and decision')
```

Pattern for decision code in the contents table

```
code = re.compile('(\d{2}\/\d{3})')
```

Page pattern in the contents table

```
code = re.compile('(\\d{2}\/\d{3})')
```

Also, this code may issue a warning, but running it a couple of times should work (ignore the warning and run until it stops showing)

Now we want to extract the text from the document

First we parse the text, this is making it into an object that python can read and work with

```
raw = parsed['content']
```

Now we extract the part of the text that has the decisions

```
t=raw[(start.search(raw[start.search(raw).span()[1]:]).span()[0])+(start
.search(raw).span()[1]):(end.search(raw).span()[0])]
```

Now we are adding the @@@@ mark to identify where to separate the text into the decisions. If we don't put the \1 mark, the code would **sub**stitute the pattern for the @@@@, instead it is leaving what is in the most inner parenthesis (if there are more then \2 and \3... would apply). This will add the mark before the decision code (dec) pattern. @@@@50/116 will be the result

```
te = dec.sub( r'@@@@\1',t )
```

With these marks we can separate the text into a list of the text of each decision

```
tex = re.split('@@@@',te)
```

And finally, the first line of the decisions text is not a decision itself, but an introduction, se we can erase this.

```
text = tex[1:]
```

text will be the list of the decisions, this is the one we will work on

---

Now, let's extract the part of the content table that has more information on the decisions, it will be a similar process but less complicated. It will extract the text of interest, identify the codes of the decisions and delete the first element which is not a decision

In [6]:
```
#reading the word document and transforming it for work
dec = re.compile('(\d{2}\/\d{3}\s+[A-Z])')
start = re.compile('Decisions brought to the attention of the Council')
end = re.compile('Chapter\s+II\s+Items for discussion and decision')
start0 = re.compile('[A-Z]\.\s+Decisions brought to the attention of the Council
end0 =re.compile('II\\.\\s+Items for discussion and decision')
code = re.compile('(\d{2}\/\d{3})')
page = re.compile('\n+\t(\d+)\n')
#--------------
#transform object
parsed = parser.from_file('50_session.doc')
#---------------
#extract the text from the object and make it into a list of the decisions
raw = parsed['content']
t=raw[(start.search(raw[start.search(raw).span()[1]:]).span()[0])+(start.search(
te = dec.sub( r'@@@@\1',t )
tex = re.split('@@@@',te)
text = tex[1:]
##---------------
#extract the index part of the decisions to get the page
index = raw[start0.search(raw).span()[0]:end0.search(raw).span()[0]]
index1=re.split('@@@@',code.sub(r'@@@@\1',index))
index1=index1[1:]
```

The next code is to explain the part that extracts the part of the text that includes the decisions but it is not necessary for the code to work

In [26]:
```
#This will locate the first "start" pattern
start.search(raw)
#This will take the position where "start" begins and where it ends
start.search(raw).span()
#take the first position [0] of the span, the second one would be [1]
start.search(raw).span()[0]
#this next part searches for the second "start" pattern because there are two (o
(start.search(raw[start.search(raw).span()[1]:]).span()[0])+(start.search(raw).s
raw[(start.search(raw[start.search(raw).span()[1]:]).span()[0])+(start.search(ra
```

```
Out[26]: <re.Match object; span=(1030, 1079), match='Decisions brought to the attentio
n of the Council>

Out[26]: (1030, 1079)

Out[26]: 1030

Out[26]: 10211
```

Keywords prior work

The next code will extract the keywords and the codes related to them, this way there is no nesting necessary in the coding that checks for the keywords in the text, instead it will look through one array of words.

The file that contains the keywords is the 'keys_general.json' There are three arrays:

- the keywords in lowercase
- the keyword in uppercase
- the main keywords, these are keywords for the classification that are more general and try to englobe the other keywords in the classification (subject areas and activities)

Let's explore the code. It will be appliying the same process to three different attributes in the json file for the classifications.

1. Read the necessary tools, which are functools and operator

```
import functools
import operator
```

2. Create an empty list for the arrays of the words, the code and the classification

```
key=[]
code_key=[]
key_class=[]
```

3. This loop is going to fill the empty lists (with the *.append*) and add the classification and code. The amount of times a code and a classification *([i['code]])* are added to the list is the same as the number of keywords *(len(j['keywords']))*.

```
for i in keys:
 if 'keywords' in i:
     key.append(i['keywords'])
     code_key.append((len(i['keywords']))*[i['code']])
     key_class.append((len(i['keywords']))*[i['desc']])
 for j in i['activities']:
     key.append(j['keywords'])
     code_key.append((len(j['keywords']))*[j['code']])
     key_class.append((len(j['keywords']))*[j['desc']])
     if 'subject_areas' in j:
         for k in j['subject_areas']:
             key.append(k['keywords'])
             code_key.append((len(k['keywords']))*[k['code']])
             key_class.append((len(k['keywords']))*[k['desc']])
```

4. This leaves with a list of lists [[key1.1,key1.2],[key2.1,key2.2,key2.3],[key3.1],[]]. We will eliminate empty brackets and have a list of keys instead of a list of lists.

```
key = [x for x in key if x != []] #delete empty brakets
key = functools.reduce(operator.iconcat, key, [])
```

In [11]:
```
keys = json.loads(open('keys_general.json').read())
#turn the keywords file into lists because it is easier to run this in the loop
#lowercase
import functools
import operator
key=[]
code_key=[]
key_class=[]

for i in keys:
    if 'keywords' in i:
        key.append(i['keywords'])
        code_key.append((len(i['keywords']))*[i['code']])
        key_class.append((len(i['keywords']))*[i['desc']])
    for j in i['activities']:
        key.append(j['keywords'])
        code_key.append((len(j['keywords']))*[j['code']])
        key_class.append((len(j['keywords']))*[j['desc']])
        if 'subject_areas' in j:
            for k in j['subject_areas']:
                key.append(k['keywords'])
                code_key.append((len(k['keywords']))*[k['code']])
                key_class.append((len(k['keywords']))*[k['desc']])

key = [x for x in key if x != []] #delete empty brakets maybe haha
code_key = [x for x in code_key if x != []]
key_class = [x for x in key_class if x != []]
key = functools.reduce(operator.iconcat, key, [])
code_key = functools.reduce(operator.iconcat, code_key, [])
key_class = functools.reduce(operator.iconcat, key_class, [])

#uppercase
upper=[]
upper_code=[]
upper_class=[]

for i in keys:
    if 'upper_keywords' in i:
        upper.append(i['upper_keywords'])
        upper_code.append((len(i['upper_keywords']))*[i['code']])
        upper_class.append((len(i['upper_keywords']))*[i['desc']])
    for j in i['activities']:
        if 'upper_keywords' in j:
            upper.append(j['upper_keywords'])
            upper_code.append((len(j['upper_keywords']))*[j['code']])
            upper_class.append((len(j['upper_keywords']))*[j['desc']])
            if 'subject_areas' in j:
                for k in j['subject_areas']:
                    if 'upper_keywords' in k:
                        upper.append(k['upper_keywords'])
                        upper_code.append((len(k['upper_keywords']))*[k['code']]
                        upper_class.append((len(k['upper_keywords']))*[k['desc']

upper = [x for x in upper if x != []] #delete empty brakets maybe haha
upper_code = [x for x in upper_code if x != []]
upper_class = [x for x in upper_class if x != []]
```

```
upper = functools.reduce(operator.iconcat, upper, [])
upper_code = functools.reduce(operator.iconcat, upper_code, [])
upper_class = functools.reduce(operator.iconcat, upper_class, [])



#main keys
main=[]
main_code=[]

for i in keys:
    if 'main_keys' in i:
        main.append(i['main_keys'])
        main_code.append((len(i['main_keys']))*[i['code']])
    for j in i['activities']:
        if 'main_keys' in j:
            main.append(j['main_keys'])
            main_code.append((len(j['main_keys']))*[j['code']])
        if 'subject_areas' in j:
            for k in j['subject_areas']:
                    if 'main_keys' in i:
                        main.append(k['main_keys'])
                        main_code.append((len(k['main_keys']))*[k['code']])

main = [x for x in main if x != []]
main_code = [x for x in main_code if x != []]
test=[]
for i in main_code:
    y=list(set(i))
    test.append(y)
main_code=test
main_code=functools.reduce(operator.iconcat,main_code,[])
```

Do not run the following chunk more than once, if this is done, the decisions will be added the number of times the chunk is runned.

In the following chunk, the **year, link** must be put manually and check if the **chapter** is still the 'I'

We are generating the next element of the list sessions. We are extracting more information.

Pattern to find the decisions 50/101 50/102 50/103 50/103

```
dec = re.compile('(\\d{2}\\/\\d{3})')
```

The decisions can begin with "The Statistical Commission" or "The Commission"

```
desc= re.compile('(The Statistical Commission)|(The Commission)')
```

To add the page

```
lower = lambda x: page.search(x).span()[0]
up = lambda x: page.search(x).span()[1]
```

This is to clean the paragraphs. They start with a (a) for example, but can have space or tab before

```
p1=re.compile('\s*(\([a-z]+\))')
```

This is for the paragraphs to put the 'br' between <>, which means break into a new line

```
let = re.compile('((\s{2,}\([a-z]+\)))')
```

Then this loop will clean the text and add the keywords in the text, link them to the codes and add the main keys. Let's look at the loop with detail:

The for will go through all the elements in "text" (the list of the text of the decisions)

```
decs=[]
for j in text:
```

The text has some extra characters that are not needed, and we need to separate paragraphs.
It will firstly look for the description (1), then
add the brake < br >, meaning go for a new line character wherever it finds a letter between a parenthesis (2)
It will eliminate the new line (\n) and tab (\t) characters (3) and (4)
finally, eliminate additional space before the paragraphs start (5)

```
    d1=j[desc.search(j).span()[0]:] #(1)
    d2 = let.sub(r'<br><br>\1',d1) #(2)
    d3 = re.sub('\n','',d2) #(3)
    d4 = re.sub('\t','',d3) #(4)
    description = p1.sub(r'\1',d4) #(5)
```

We create a set of empty lists to fill them with the keywords, each time the process starts again (because of the loop) the lists will be empty again. But, we save them into the attributes of each decision before the loop begins again.

There are three for's in here because we will go by the lists of the keywords in lowercase, in uppercase and the main keywords.

```
#now lets put the keywords and main keys
temp_key=[]
temp_code=[]
temp_class=[]
for l in key:
    if l in description.lower():
        temp_key.append(l)
        temp_code.append(code_key[key.index(l)])
        temp_class.append(key_class[key.index(l)])
for p in upper:
    if p in description:
        temp_key.append(p)
        temp_code.append(upper_code[upper.index(p)])
        temp_class.append(upper_class[upper.index(p)])
#adding the main keywords
mains=[]
for k in main_code:
    if k in list(set(temp_code)):
        mains.append(main[main_code.index(k)])
mains=functools.reduce(operator.iconcat, mains, [])
#this will add the decisions to the file
```

Now that we have all this information we will add to the file year, chapter and link chapter

First, it will look for the decision code in the text (1)
then, extract the title (2)

```
dec.search(text[0]).span()
(0, 6)
```

this function looks for the pattern and outputs the position where the pattern starts and where it ends. The span() is to have only the positions.

Then (3) adds the number of the session and the year must be put manually as well as the link (4), the year (5), and the chapter (6) but the latter one is usually "I". index[0] is the element that contains the section (7) the page part (8) has two functions that locate the position of the page the decription (9) is the one worked at the top of the loop as are the keys (10), (12) the 'topic'(11) and 'classification' (13) are to be filled manually and explained in the next chunks.

```
    decs.append({'code':j[dec.search(j).span()[0]:dec.search(j).span()[1
]], #(1)
                'title':(j[((dec.search(j).span()[1])+1):((desc.search(j
).span()[0])-1)]).strip(), #(2)
                'session':str(text[0][0:2])+'th Session (2019)', #(3)
                'link':'https://unstats.un.org/unsd/statcom/50th-session/
documents/Report-on-the-50th-session-of-the-statistical-commission-E.pd
f', #(4)
                'year':'2019', #(5)
                'chapter':'I', #(6)
                'section':index[0], #(7)
                'page':(index1[text.index(j)][lower(index1[text.index(j
)]):up(index1[text.index(j)])]).strip(), #(8)
                'desc':description, #(9)
                'keys':temp_key, #(10)
                'topic':'', #(11)
                'main_keys':mains, #(12)
                'classification':''}) #(13)
```

Then it will add the decisions of the current session into the file and now two steps are left, which are adding the topics and classification, and saving the file

In [12]:
```
dec = re.compile('(\\d{2}\\/\\d{3})')
desc= re.compile('(The Statistical Commission)|(The Commission)')
lower = lambda x: page.search(x).span()[0]
up = lambda x: page.search(x).span()[1]
p1=re.compile('\s*(\([a-z]+\))')
let = re.compile('((\s{2,}\([a-z]+\)))')
#=======================
decs=[]
for j in text:
    d1=j[desc.search(j).span()[0]:]
    d2 = let.sub(r'<br><br>\1',d1)
    d3 = re.sub('\n','',d2)
    d4 = re.sub('\t','',d3)
    description = p1.sub(r'\1',d4)
    temp_key=[]
    temp_code=[]
    temp_class=[]
    for l in key:
        if l in description.lower():
            temp_key.append(l)
            temp_code.append(code_key[key.index(l)])
            temp_class.append(key_class[key.index(l)])
    for p in upper:
        if p in description:
            temp_key.append(p)
            temp_code.append(upper_code[upper.index(p)])
            temp_class.append(upper_class[upper.index(p)])
    mains=[]
    for k in main_code:
        if k in list(set(temp_code)):
            mains.append(main[main_code.index(k)])
    mains=functools.reduce(operator.iconcat, mains, [])
    decs.append({'code':j[dec.search(j).span()[0]:dec.search(j).span()[1]],
                'title':(j[((dec.search(j).span()[1])+1):((desc.search(j).span()[
                'session':str(text[0][0:2])+'th Session (2019)',
                'report_link':'https://unstats.un.org/unsd/statcom/50th-session/d
                'year':'2019',
                'chapter':'I',
                'section':index[0],
                'page':(index1[text.index(j)][lower(index1[text.index(j)]):up(ind
                'desc':description,
                'keys':temp_key,
                'topic':'',
                'main_keys':mains,
                'classification':''})
```

In [13]:
```
#let's take a look into the last decision in the file
decs[-1]
```

Out[13]:
```
{'code': '50/124',
 'title': 'Information items',
 'session': '50th Session (2019)',
 'report_link': 'https://unstats.un.org/unsd/statcom/50th-session/documents/Rep
ort-on-the-50th-session-of-the-statistical-commission-E.pdf',
 'year': '2019',
 'chapter': 'I',
 'section': 'B',
 'page': '28',
 'desc': 'The Statistical Commission took note of the following reports and the
pertinent comments on some of them: Report of the Secretary-General on demograp
hic statistics[footnoteRef:34] [34:  E/CN.3/2019/23.] Report of the World Healt
h Organization outlining current work on health statistics[footnoteRef:35] [35:
E/CN.3/2019/24.] Report of the Intersecretariat Working Group on Household Surv
eys[footnoteRef:36] [36:  E/CN.3/2019/25.] Report of the Ottawa Group on Price
Indices[footnoteRef:37] [37:  E/CN.3/2019/26.] Report of the Global Working Gro
up on Big Data for Official Statistics[footnoteRef:38] [38:  E/CN.3/2019/27.] R
eport of the Secretary-General on statistical capacity development[footnoteRef:
39] [39:  E/CN.3/2019/28.] Progress report of the Statistical Data and Metadata
Exchange sponsors[footnoteRef:40] [40:  E/CN.3/2019/29.] Report of the Committe
e for the Coordination of Statistical Activities[footnoteRef:41] [41:  E/CN.3/2
019/30.] Report of the Expert Group on the Integration of Statistical and Geosp
atial Information[footnoteRef:42] [42:  E/CN.3/2019/31.] Report of the Secretar
y-General on policy decisions of the General Assembly and the Economic and Soci
al Council that are relevant to the work of the Statistical Commission[footnote
Ref:43] [43:  E/CN.3/2019/32.] ',
 'keys': ['demographic statistics',
  'health statistics',
  'metadata',
  'metadata exchange',
  'big data',
  'geospatial information',
  'household survey',
  'data exchange',
  'coordination of statistical activities',
  'statistical capacity',
  'Economic and Social Council',
  'Committee for the Coordination of Statistical Activities',
  'Expert Group',
  'Working Group',
  'Intersecretariat',
  'General Assembly',
  'World Health Organization',
  'Economic and Social Council'],
 'topic': '',
 'main_keys': ['population',
  'migration',
  'health',
  'metadata',
  'information processing',
  'data sources',
  'open data',
  'data exchange',
  'data sharing',
  'coordinations mechanisms',
  'partnerships',
  'capacity building',
  'technical cooperation'],
 'classification': ''}
```

The only thing missing are the topics and classifications!

But this has to be done manually... let's make an excel file to complete this last step :D The class refers to the domains of the Classification of International Statistical Activities

Domains:

- Demographic and social statistics
- Economic statistics
- Environment and multi-domain statistics
- Methodology of data collection, processing, dissemination and analysis
- Strategic and managerial issues of official statistics

These are the topics(46), they are based on the titles of all the decisions:

Topics	***Topics***	***Topics***
Agriculture	Finance	Programme questions
Big Data	Fundamental Principles of Official Statistics	Quality assurance
Business	Gender	Refugees
Capacity-building	Geospatial Information	Social statistics
Classifications	Governance	Statistical Commission
Climate change	Health	Statistical programmes
Data sharing	Household surveys	Sustainable development
Demography	Human settlements	Tourism
Development	Industry	Trade
Disability	Information items	United Nations
Disasters	Information society	United Nations Statistics Division
Documents considered at the session	Justice and crime	World Statistics Day
Economy	Labour	
Education	Migration	
Energy	National accounts	
Environment	Population and housing censuses	
Environmental-economic accounting	Prices	

In [122]:
```
dec_code=[]
dec_title=[]

for j in decs[(-(len(text))):]:
    dec_code.append(j['code'])
    dec_title.append(j['title'])
```

In [124]:
```
import pandas as pd
df = pd.DataFrame({'code':dec_code,
                   'title': dec_title})
df.to_excel('for_topics.xlsx')
```

The former cell will write an excel file in the directory of this file! This way the classification and topics can be added. The name of the file is

'for_topics.xlsx'

The clumns to be added are 'class' and 'topic' **It is important to keep this order in the new columns in excel!!**.

Nest step is to read the xlsx file and add the topics and domains to their respective decisions

In [153]:
```
import xlrd
book = xlrd.open_workbook('for_topics.xlsx')
sh1 = book.sheet_by_index(0)

sh1.row_values(0)
sh1.col_values(3)[sh1.col_values(1).index('50/102')]
```

Out[153]:
```
['', 'code', 'title', 'class', 'topic']
```

Out[153]:
```
'Environment and multi-domain statistics'
```

In [167]:
```
for j in decs[(-len(text)):]:
    j['classification']=sh1.col_values(3)[sh1.col_values(1).index(j['code'])]
    j['topic']=sh1.col_values(4)[sh1.col_values(1).index(j['code'])]
```

```
In [168]: decs[-24]
```

```
Out[168]: {'code': '50/101',
           'title': 'Global indicator framework for the Sustainable Development Goals and
          targets of the 2030 Agenda for Sustainable Development',
           'session': '50',
           'year': '2019',
           'chapter': 'I',
           'section': 'B',
           'page': '10',
           'desc': 'The Statistical Commission:<br><br>(a)Welcomed the report of the Inte
          r-Agency and Expert Group on Sustainable Development Goal Indicators,[footnoteR
          ef:1] and expressed its appreciation to the Group for its quality work and the
          progress made in the implementation of its mandate; [1:  E/CN.3/2019/2.]<br><br
          >(b)Agreed on the proposed annual refinements, as presented in annex II to the
          report of the Inter-Agency and Expert Group;<br><br>(c)Expressed its appreciati
          on for the progress made towards finalizing the methodologies for many tier III
          indicators, and stressed the urgent need to complete the methodological develop
          ment of the indicators remaining in tier III to ensure that the review of all S
          ustainable Development Goals and targets is not delayed;<br><br>(d)Also express
          ed its appreciation to the Inter-Agency and Expert Group for its work on identi
          fying proxies for immediate use to monitor targets while tier III indicators fo
          r those targets are being finalized, and welcomed the list of global proxy indi
          cators available on the website of the Group;<br><br>(e)Further expressed its a
          ppreciation for the ongoing work to improve data flows and global reporting, es
          pecially the collaborative work that took place between the Inter-Agency and Ex
          pert Group and the Committee for the Coordination of Statistical Activities, an
          d endorsed the criteria for the implementation of the guidelines on data flows
          and global data reporting for the Sustainable Development Goals, contained in a
          nnex I to the report;<br><br>(f)Welcomed the background document entitled “Best
          practices in data flows and global data reporting for the Sustainable Developme
          nt Goals” as a useful compilation of case studies on data flows from countries
          to international agencies, and requested the Inter-Agency and Expert Group to c
          ontinue to regularly update the document as additional best practices are ident
          ified;<br><br>(g)Took note of the request that non-response by countries should
          not be considered as consent to publish;<br><br>(h)Encouraged the continuous sh
          aring of best practices with regard to the automation of data flows from countr
          ies to international agencies, using national data platforms and databases that
          contain sufficiently detailed information, including metadata, with a view to r
          educing the reporting burden for countries and supporting country ownership of
          data;<br><br>(i)Welcomed the background document entitled “Data disaggregation
          and Sustainable Development Goal indicators: policy priorities and current and
          future disaggregation plans” as a useful reference on the categories and dimens
          ions of data disaggregation and on policy priorities for the most vulnerable po
          pulation groups, and requested the Inter-Agency and Expert Group to continue it
          s work on data disaggregation to fulfil the ambition of the 2030 Agenda for Sus
          tainable Development[footnoteRef:2] of leaving no one behind; [2:  General Asse
          mbly resolution 70/1.]<br><br>(j)Recognized that the 2020 comprehensive review
          provides an opportunity to improve the global indicator framework, endorsed the
          proposed guiding principles, criteria and timeline for the review, and encourag
          ed the Inter-Agency and Expert Group to consider the existing standards and fra
          mework, including the System of Environmental-Economic Accounting, in the revie
          w, to improve Sustainable Development Goal monitoring;<br><br>(k)Took note of t
          he suggestions on some indicators that might be considered by the Inter-Agency
          and Expert Group during the comprehensive reviews, including total official sup
          port for sustainable development (TOSSD);<br><br>(l)Welcomed the background doc
          ument prepared by the Inter-Agency and Expert Group working group on interlinka
          ges;<br><br>(m)Stressed that many countries still face challenges in addressing
          the data needs for the Sustainable Development Goals, and reiterated the urgent
          need for increased resources and coordinated statistical and analytical capacit
          y-building, in particular for African countries, the least developed countries,
          landlocked developing countries and small island developing States;<br><br>(n)A
          pproved the proposed work programme of the Inter-Agency and Expert Group, as de
          scribed in section VI of its report.',
           'keys': ['demographic statistics',
            'health statistics',
            'metadata',
            'metadata exchange',
            'big data',
            'geospatial information',
            'household survey',
            'data exchange',
            'coordination of statistical activities',
            'statistical capacity',
            'Economic and Social Council',
            'Committee for the Coordination of Statistical Activities',
            'Expert Group',
            'Working Group',
            'Intersecretariat',
            'General Assembly',
            'World Health Organization',
            'Economic and Social Council'],
           'topic': 'Sustainable development',
           'main_keys': ['population',
            'migration',
            'health',
            'metadata',
            'information processing',
            'data sources',
            'open data',
            'data exchange',
            'data sharing',
            'coordinations mechanisms',
            'partnerships',
            'capacity building',
            'technical cooperation'],
           'classification': 'Environment and multi-domain statistics'}
```

Saving the final file into a json file

```python
with open('decisions-37-50sess.json','w') as f:
    json.dump(decs,f,indent=4)
```

The and 'decisions-37-50sess.json' is the name of the new file
'w' 'decisions-37-50sess.json' stays like that
the object that we are saving as json file is the and decs object.

In [1]:
```
import json
with open('decisions-37-50sess.json', 'w') as f:
    json.dump(decs, f, indent=4)
```

...

Keyword extraction

This is not necessary

So, the work reagarding the keyword extraction is done in the keys_general.json file, but let's check how to get there!

First we install the tools needed to run the algorithm

```
pip install rake-nltk
```

This only needs to be runned once. It may take a while to download everything.

In [ ]:
```
#pip install rake-nltk
```

In [32]:
```
from rake_nltk import Rake
r=Rake()
```

In [41]:
```
r.extract_keywords_from_text(decs[6]['desc'])
r.get_ranked_phrases()[0:20]
```

Out[41]:
```
['economic accounts ;< br >< br >( c',
 'economic accounting ;< br >< br >( b',
 'statistical commission :< br >< br >(',
 'united nations statistics division',
 'various groups responsible',
 'united nations committee',
 'environmental accounting',
 'related statistics',
 'would serve',
 'working relationship',
 'took note',
 'term objectives',
 'governance structure',
 'facilitate exchanges',
 'best practices',
 'based platform',
 'committee',
 'environmental',
 'work',
 'website']
```

This is not 100% accurate. So I would advise to erase any possible "noise" and to check the outcome.

Word Clouds :D

This is to put in the presentation and for fun!

In [33]:
```
#pip install wordcloud
import json
decs = json.loads(open('decisions.json').read())
```

In [44]:
```
import numpy as np
import pandas as pd
from os import path
from PIL import Image
from wordcloud import WordCloud, STOPWORDS, ImageColorGenerator
import urllib
import requests

import matplotlib.pyplot as plt
```

In [6]:
```
?WordCloud
```

In [ ]:
```
#make a df with the keys
```

In [38]:
```
codess=[]
keyss=[]
for i in decs:
    keyss.append(i['keys'])
    codess.append(len(i['keys'])*[i['code']])
```

In [40]:
```
import functools
import operator
keysss = functools.reduce(operator.iconcat, keyss, [])
codesss = functools.reduce(operator.iconcat, codess, [])
```

```
In [41]: keyssss = functools.reduce(operator.iconcat, keyss, [])
         keyssss
         d=' '.join(keyssss)
```

```
Out[41]: ['data collection',
          'data dissemination',
          'standards',
          'training',
          'capacity-building',
          'industrial production',
          'economic statistics',
          'services statistics',
          'statistics programme',
          'informal sector',
          'formal sector',
          'distributive-trade',
          'database',
          'national data',
          'compilation',
          'good practices',
          'technical assistance',
          'guidance',
          'economic statistics',
```

```
In [42]: wordcloud = WordCloud(font_path='arial',min_font_size=14,max_font_size=60,backgr
         plt.imshow(wordcloud, interpolation='bilinear')
         plt.axis("off")
         plt.show()
```

```
Out[42]: <matplotlib.image.AxesImage at 0x78ec7b8>

Out[42]: (-0.5, 1999.5, 299.5, -0.5)
```

work programme
Working Group
Inter Agency
Development Goals
research
guidelines
Expert Group
statistical capacity
national statistical
technical assistance
Friends Chair
classification
Committee Coordination
Group
Intersecretariat
compilation
governance
capacity building
statistical activities
programme work
principles
Economic Social
Social Council
World Bank
National Account
guidance
sustainable development
systems statistical
statistical systems
training
standards
coordination statistical
collaboration
partnership
General Assembly
statistics
environmental economic
activities Committee

```
In [44]: wordcloud = WordCloud(font_path='arial',min_font_size=20,max_font_size=60,backgr
         plt.imshow(wordcloud, interpolation='bilinear')
         plt.axis("off")
         plt.show()
```

```
In [45]: #this code is to save the image
         #wordcloud.to_file("first_review.png")

Out[45]: <wordcloud.wordcloud.WordCloud at 0xbc21e80>
```

```
In [47]: #wordcloud.to_file("first_review.png")
         ?WordCloud
```

In [47]:
```
#fail but still fun... this is supposed to be the stats com image hahaha
mask = np.array(Image.open(requests.get('https://unstats.un.org/home/assets/img/l
wordcloud_spa = WordCloud(background_color="white", max_words=1000, mask=mask).ge

# create coloring from image
image_colors = ImageColorGenerator(mask)
plt.figure(figsize=[7,7])
plt.imshow(wordcloud_spa.recolor(color_func=image_colors), interpolation="biline
plt.axis("off")

# store to file
plt.savefig("cloud.png", format="png")
#plt.show()
```

Out[47]:
```
<Figure size 504x504 with 0 Axes>
```

Out[47]:
```
<matplotlib.image.AxesImage at 0xafee668>
```

Out[47]:
```
(-0.5, 378.5, 297.5, -0.5)
```

capacity-building
statistical systems
Working Group
Development Goals
programme work
research
Friends Chair
governance
work programme
systems statistical
guidelines
statistical activities
General Assembly
statistical capacity
standards
training
guidance
sustainable development
coordination statistical
Group Intersecretariat
Expert Group
collaboration
partnership
World Bank
Economic Social
principles
technical assistance
compilation
statistics
classification
environmental economic
national statistical
Comparison Programme
Inter Agency
Social Council
transparent
high level
data collection
National Account
database
data exchange

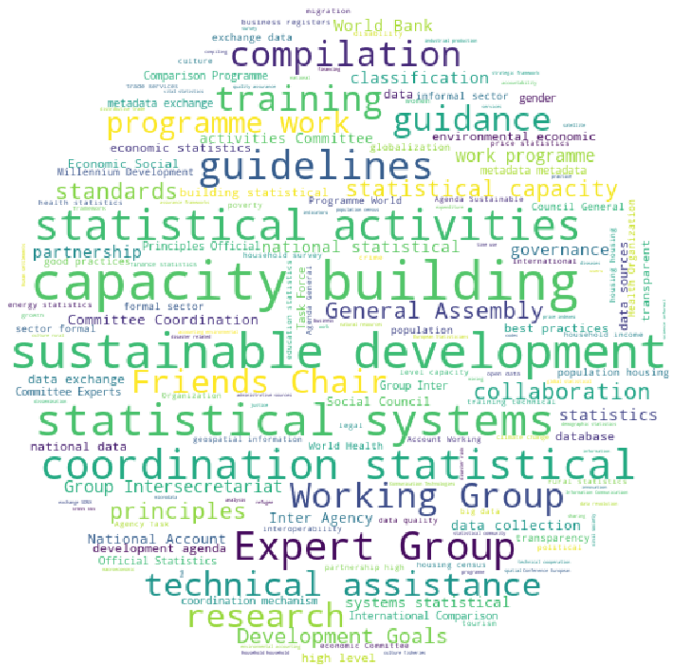
In [48]:
```
#oval
#mask = np.array(Image.open(requests.get('https://discourse-cloud-file-uploads.s
#circle
#mask = np.array(Image.open(requests.get('https://ichef.bbci.co.uk/news/976/cpspr
mask = np.array(Image.open(requests.get('https://ichef.bbci.co.uk/news/976/cpspr
wordcloud_spa = WordCloud(background_color="white", max_words=1000, width=2000,h


word_cloud = WordCloud(background_color='white', mask=mask).generate(d)
plt.figure(figsize=(20,10),facecolor = 'white', edgecolor='blue')
plt.imshow(word_cloud)
plt.axis('off')
plt.tight_layout(pad=0)
plt.show()
#save image:
#plt.savefig("cloud.png", format="png")
#I
```

Out[48]:
```
<Figure size 1440x720 with 0 Axes>
```

Out[48]:
```
<matplotlib.image.AxesImage at 0xb27c668>
```

Out[48]:
```
(-0.5, 975.5, 548.5, -0.5)
```



```
<Figure size 432x288 with 0 Axes>
```