A SDMX dashboard generator

OBJECTIVE

The objective of this hackathon challenge is to develop an **open-source** responsive web application which effectively reads a specification file and retrieves data from SDMX APIs to create a dynamic dashboard. The web application will provide dashboard designers with a user-friendly interface to create customizable dashboards, effortlessly integrating data from SDMX APIs and offering rich visualization options. The project aims to empower dashboard designers to explore, analyse, and present data from SDMX sources in a visually appealing and intuitive manner.

BENEFITS AND IMPACT:

The SDMX dashboard generator will provide a valuable solution for data analysts, researchers, policymakers, and organizations seeking to harness the power of SDMX data through customizable dashboards. By simplifying the process of integrating SDMX data and specification files, **Dashboard Generator** will empower users to gain actionable insights and make informed decisions based on authoritative and up-to-date data. The open-source nature of **the Dashboard generator** will foster collaboration, customization, and community contributions, driving continuous improvement and innovation.

FUNCTIONAL SPECIFICATION OVERVIEW

The SDMX Dashboard generator is an application able to dynamically create and display a dashboard composed of several visualizations (from now on, "visuals" or "charts"), using data obtained from SDMX dataflows, as defined by the specifications provided (for example) in a YAML file. The way this YAML file is read by the application is to be defined by the developer (e.g., putting the file in a specific folder of the server).

The dashboard will be displayed in a browser, accessible through an URL which must identify it univocally and be related to the *DashID* that appears in the configuration file. For example, it may be composed by a base URL concatenated with the *DashID*. There might be multiple dashboards defined and ready to display at the same time, each one with its own configuration file and a unique *DashID*. When a browser hits the URL (e.g., https://<base URL>/MyDashboard), the dashboard is to be displayed according to the specifications in the yaml file containing *DashID=MyDashboard*.

The generated dashboard will be created based on a "per row" disposition of the visuals specified. Each row contains three placeholders for charts thus, a maximum of three (3) single-width charts can be defined in the same row. The three chart placeholders specified in a row are equally distributed in the total page width (excluding any side bar if needed). A chart can be specified to use one (default), two or the three placeholders in the row. There will be no limitation in the length of the dashboard page, i.e., the user will be able to scroll down as much as needed.

Summary of key features and functionalities:

1. **Dashboard Specification File Integration**: **Dashboard Generator** will enable dashboard designers[1] to upload and utilize multiple specification files that define the layout, data sources, and visualization configurations for their dashboards. These files will provide a flexible and customizable way to specify the desired data and visualizations.

2. **SDMX API Connectivity**: **Dashboard Generator** will integrate with SDMX APIs to retrieve data directly from authoritative sources. It will support querying and retrieving data using the SDMX standard, ensuring the accuracy and reliability of the data presented in the dashboards. The queries to SDMX providers must be executed every time a dashboard viewer[2] hits the dashboard URL and they are executed by the dashboard code running in the browser or delegated to the server.

3. **Multilingual:** **Dashboard Generator** will handle the multilingual capacities of SDMX for the data and metadata displayed, not for the application configuration or dashboard settings which will be in English. The language should be set as a context variable for the application displaying the dashboard and all labels and texts must be displayed in such language, provided the locale is available for the API consumed. Otherwise, it will default to a configurable language.

4. **Dynamic Data Visualization**: **Dashboard Generator** will support dynamic data visualization by allowing dashboard designers to bind retrieved data to various chart types, such as line charts, bar charts, pie charts, and more. Dashboard designers can configure chart properties, labels, legends, notes, and colour schemes to effectively communicate insights.

5. **Interactive Dashboard Components**: Optionally, **Dashboard Generator** will enable dashboard viewers to interact with dashboard components, such as applying filters, drilling down into specific data points, and exploring different dimensions or time periods. This interactivity will enhance data exploration and analysis capabilities.

6. **Concurrent Dashboard Visualization:** **Dashboard Generator** must be able to display the same dashboard to multiple dashboard viewers independently at the same time. That means, for example, that filters applied by one dashboard viewer must not affect the visualization by other dashboard viewers.

7. **Application evolution**: There is a foreseen product evolution roadmap which includes the integration of dynamic cross-visual filters, maps, colours and patterns specification, embedded tables, search functionalities, etc. Developers are invited to optionally include some of these evolved functionalities in their product.

THE SPECIFICATIONS FILE SYNTAX

A general syntax to be used in the specifications file must be clearly defined. For example:

- Strings are specified between double quotes (").
- Inside a string or in a data operation, concepts' values can be referenced by specifying them in curly brackets ({}).
- If the concept id is prefixed by a dollar sign ($), the name of the represented item is to be returned instead, i.e. while {<concept_Id>} returns the content of <concept_id> dimension or

---

[1] Dashboard Designer is the role of users who develop a dashboard by compiling a new yaml file and upload it to the application

[2] Dashboard viewer is the generic user that consumes that dashboard created by dashboard designers

attribute, {$<concept_Id>} returns the name of the item corresponding to the content of the dimension or attribute represented by <concept_Id> (e.g. {SEX} = M, {$SEX} = Male).

- {$TIME_PERIOD} is always displayed as the period expressed in natural language. (e.g., {TIME_PERIOD} = 2020-M05, {$TIME_PERIOD} = May 2020, or Mayo 2020 if locale=es).
- Font type, size, emphasis (bold, italics, etc.) and location (LEFT, CENTER, RIGHT) can be specified in square-brackets ([]) following any text, title, note or label specification.

Example: *Title: "Labour force participation rate, [Arial, 14, Bold, Italics, CENTER]"*

A syntax and format must be defined for the specifications file. Following there is an example in YAML format with an ID for the dashboard and a list of repeating blocks for each visual defined:

```
---
DashID:
Rows:
-
  Row:
  chartType:
  Title:
  Subtitle:
  Note:
  Unit:
  unitLoc:
  Decimals:
  LabelsYN:
  legendConcept:
  legendLoc:
  xAxisConcept:
  yAxisConcept:
  downloadYN:
  dataLink:
  metadataLink:
  DATA:
```

The description and allowed content for each node is the following:

- **DashID**: Any string composed of numbers, letters, and underscores (_) used to identify the dashboard. This ID will be used to compose the URL to display the dashboard. For example, if the base URL of the application is https://mydomain/mybaseURL/ and the DashID is "MyDashboardID", the dashboard might be displayed at https://mydomain/mybaseURL/MyDashboardID.
- **Row**: An integer value 0…3 that Indicates the row where the visual is to be located. Up to three charts can share the same row and they are to be distributed left-right in the order they appear in the specifications file. A node with *Row=0* and *chartType=TITLE* allows to define *Title* and *Sub-title* for the dashboard. Use *Row=0* and *chartType=FOOTER* to specify up to two lines in *Title* and *Sub-title* nodes for the bottom of the dashboard. The *Row=0* block
- **chartType**: *<VisualType>, size.*
  Valid values for *<VisualType>* are:
  - o **VALUE:** A single value corresponding to an observation value at a given point in time displayed in the visual placeholder with *Decimals* number of decimal positions. It may

include a *Title* and a *Subtitle.* The *Unit* may appear located at *UnitLoc.* The queries specified in *DATA* must return a single value. Should it return more than one value, the first one will be used.

- o **PIE:** A pie chart composed by the values returned by the query(ies) specified in *DATA* which sum represents the full circle (360°). Each value will define a sector of x°, proportional to the fraction of the total it represents. If a single query is specified in *DATA,* it must return multiple observations for the dimension in *legendConcept*, which labels will appear in the legend. All the other dimensions must be assigned a constant value in the filters. When *DATA* includes multiple queries, each one will return one value for a pie sector, and an *<alternate label>* must be associated to each one for the legend. The nodes *Title, Subtitle, Unit, unitLoc, Decimals, LabelsYN, legendLoc, downloadYN, dataLink, metadataLink* might be used with this type.
- o **LINES:** A lines chart including one or multiple series, either time series or cross-sectional. For time series representation (the usual case), *xAxisConcept* is *TIME_PERIOD*, but any other dimension can be specified in case of cross-sectional series. *yAxisConcept* should normally be OBS_VALUE. The query or queries specified in *DATA* may return one or multiple series. If a single query is used, it must return multiple observations for the dimension in *xAxisConcept* (usually TIME_PERIOD) and, eventually, for a second dimension specified in *legendConcept* that define multiple series, one for each of its returned values. All the other dimensions must be assigned a constant value in the filters. When *DATA* includes multiple queries, each one will return one series (one line) and all of them must have the dimension specified in *legendConcept* open to multiple values. In summary, for a LINES chart, either the user specifies the time series query to be represented by each line, or a single query with just one "variable" breakdown dimension specified in *legendConcept* (i.e., all the other dimensions except TIME_PERIOD have been set to a single value in the query filters). The nodes *Title, Subtitle, Unit, unitLoc, Decimals, LabelsYN, legendLoc, downloadYN, dataLink, metadataLink* might be used with this type.
- o **BARS:** A vertical bars chart including one or multiple series (clustered bars), either time series or cross-sectional. *xAxisConcept* can be any dimension which values will identify each bar. *yAxisConcept* (the height of the bar) should normally be OBS_VALUE. The query or queries specified in *DATA* may return one or multiple series. If a single query is used, it must return multiple observations for the dimension in *xAxisConcept* and, eventually, for a second dimension specified in *legendConcept* that define multiple series, one for each of its returned values. This concept defines the "clusters" of bars. All the other dimensions must be assigned a constant value in the filters. When *DATA* includes multiple queries, each one will return one series (one cluster) and all of them must have the dimension specified in *legendConcept* open to multiple values. In summary, for BARS chart, the user can specify multiple queries to be represented by each bar, or a single query with just one "variable" breakdown dimension specified in *legendConcept,* which categories will be used for the bars. The nodes *Title, Subtitle, Unit, unitLoc, Decimals, LabelsYN, legendLoc, downloadYN, dataLink, metadataLink* might be used with this type.

TITLE and **FOOTER: TITLE** is used to define the *Title* and *Subtitle* of the Dashboard, and **FOOTER** to display an optional text of up to two lines of text in *Title* and *Subtitle* at the bottom of the page. The optional parameter *size* can be *single, double,* or *triple*. It must be used to define the width (in chart placeholders) to be occupied by the chart. The default is *single*.

- **Title**: A string to be displayed as title of the chart. Any concept can be referenced as part of it. e.g., "Status in employment - {$TIME_PERIOD}", [Arial, 28, Bold, Italics]
- **Subtitle**: Same format as *Title,* it is displayed below it. If not specified, no subtitle is displayed.

- **Note**: An optional free text note to be displayed in the visual. It should include Font type, size, emphasis (bold, italics, etc.) and location (LEFT, CENTER, RIGHT) specified in square-brackets ([]). It may contain free text or referenced concepts in curly brackets ({}).
- **Unit**: Specifies the unit of measure. Should usually be "{$UNIT_MEASURE}, {$UNIT_MULT}"
- **unitLoc**: It can be **PREFIX**, **SUFFIX** or **UNDER**, with reference to the Title. **HIDE** means that no unit is to be displayed.
- **Decimals**: Defines the number of decimals to display the observation value. Usually set to {DECIMALS}
- **LabelsYN**: Possible values are **Yes**/**No** and indicates whether the description of each category is to be displayed in the chart. (Not applicable for VALUE)
- **legendConcept**: Indicates the concept (dimension) that defines multiple series to be displayed in the visualization. For *PIE* indicates the dimension that defines the sectors of the pie; for *LINES,* its values identify each of the lines; for *BARS,* the values of this concept define each of the clusters. The legend is composed of its value labels i.e., {$<dimension item id>}. If several queries are included in *DATA* node, it should specify **MULTI.**
- **legendLoc:** Can be **TOP**, **BOTTOM**, **LEFT**, **RIGHT**. Indicate **HIDE** for no legend. (Not applicable for VALUE). When multiple series are specified with a single dataflow, the default legend label is {$<dimension item id>} taken from the dimension in *legendConcept*. When multiple series are obtained with multiple queries in DATA, the default legend label is the *Dataflow name*. Any <alternate label> indicated in the DATA node after the query overrides these default labels.
- **xAxisConcept**: Indicates the concept to be allocated to the "x" axis, usually TIME_PERIOD for *LINES*. For BARS it indicates the dimension that define the bars. (Not applicable for VALUE)
- **yAxisConcept**: Indicates the concept to be allocated to the "y" axis, usually the observation value representing the MEASURE. (Not applicable for PIE and VALUE) Normally it is the OBS_VALUE concept
- **downloadYN**: Possible values are **Yes**/**No** and indicates whether the download of the data behind the chart is allowed. Might be triggered by clicking an icon or selecting from a menu when right-clicking on the chart.
- **datalink**: An URL of an application or file containing related data. 'It is actionable by clicking on the chart to open in a new browser tab.
- **metadataLink**: An URL of an application or file containing reference metadata. If present, a "Blue 'i'" icon is displayed besides the title, and by clicking on it the link opens in a new browser tab.
- **DAT**A: The syntax to specify the DATA for the chart is the following:

    ["*Dataflow query <operator> Dataflow query, {<alternate label>}*"
    :
    "*Dataflow query <operator> Dataflow query, {<alternate label>}*"]

where:
- *Dataflow query* is a valid SDMX query used to get the data to display, containing the appropriated filtering string and time period selection (using the SDMX query parameters startPeriod=, endPeriod= and lastNObservations=) for the purpose of the visualization.
- *<alternate label>* is optional and is enclosed in curly brackets ({}). It overrides the default label and can include references to {$<concept_Id>}.
- Optionally, it might be possible to compute values to be represented using the *operators* **+ - * /** between the values obtained from the data queries, e.g., multiplying a result by the unit multiplier value, or computing a rate as the quotient between two levels.

- DATA section can include a list of URLs (values or series), according to the chart characteristics. Each specification must be enclosed in double quotes ("). The list must be enclosed in brackets ([ ]) complying with the YAML syntax.

MINIMUM VIABLE PRODUCT (MVP):

The specifications included in these Terms of Reference are considered those for the MVP. All aspects that have not been included in this document but are considered relevant for the final product by the developers, must be defined and documented, explaining the reasons for choosing the solution. Examples of such type of "open" requirements are the technical architecture, stylesheets, and colour schemes specification, etc.

Similarly, developers are free to change any of the specifications provided the functionalities of the product are kept or improved. For example, modifying the proposed syntax, adding new visuals, or changing the format of the specifications file. Any of such changes by the developers, must be documented, explaining the reasons that lead to that decision.

A sample specification file is included as Annex 1. For reference, the dashboard resulting of the application of these specifications can be seen at

https://app.powerbi.com/view?r=eyJrIjoiNmE3ZWM0MzItYjI2MC00NWEzLWE3YjMtNjI4Zjg0ZTYxOG YwIiwidCI6ImQ0OWIwN2NhLTIzMDItNGU3Yy1iMmNiLWUxMjEyNzg1Mjg1MCIsImMiOjl9 and in the Annex 2.

The file *HackathonMyDashboard_spec.yaml* contains another example with data queried from multiple SDMX APIs. **Both files will be used to test the proposed applications.**

If a different syntax and/or file format is defined for the specifications file, these example specifications must be translated and delivered together with the application source code and documentation.

TECHNOLOGY STACK:

Dashboard Generator will be developed using any modern web technologies such as JavaScript, HTML5, CSS, and frameworks like React or Vue.js for building the frontend. For server-side development, any backend framework like Node.js or Python can be used. SDMX API integration will be implemented using relevant libraries like "SdmxSource", "SdmxCore" or other existing libraries, ensuring seamless connectivity with SDMX data sources.

THE CHALLENGE

The participants will develop an **open-source** application according to the requirements described in the previous sections. It must have a permissive license compatible with Apache 2.0 (e.g., MIT).

The product will be delivered in a GIT repository containing the source code and descriptive documentation. It must include a user's guide in English with enough information to deploy and run the submitted application files.

The deadline for submission of the source code and documentation is ---------------

Only the participants proposing the best evaluated products will be contacted by the Committee to schedule a live demonstration of their SDMX Dashboard Generator.

It is desirable to get the application handed over in a docker container to facilitate its deployment for testing. Otherwise, the participant can host the application at their own facilities making it available through internet to the Committee to evaluate it.

During this demo, at least the two sample specification files will be used to assess and benchmark the products.

THE PRIZE

The participant/team who developed the best evaluated proposal will be awarded an external collaboration contract(s) (see in Annex 3 the characteristics of these contracts) with the International Labour Organization for a total amount of CHF 10.000. Under this collaboration, the participant/team will do the necessary knowledge transfer to designated specialists for the customization and deployment of **Dashboard Generator.**

It must be considered that external collaboration contracts must not be issued to:

(a) A close relative 3 of an ILO serving official except under conditions established by Circular No. 666, Series 6, Employment, and other types of contracts with close relatives of ILO officials, of 4 April 2007;

(b) former officials who left the Office with an agreed termination in accordance with article 11.16 of the Staff Regulations and ILO Circular No. 619, Rev. 1, Series 6, Agreed termination, of 10 December 2004;

(c) to persons subject to United Nations sanctions.

Persons holding employment contracts at ILO, either full time or part time, and those with internship agreements should not be issued a simultaneous external collaboration contract. External collaboration contracts should not be issued to ILO officials on special leave without pay status or to persons during the six-month break specified in Circular No. 630, Series 6, except under conditions specified in the relevant policies.

How to Participate:

If you wish to participate, please send an email to sdmx2023@sdmx.org with subject "SDMX 2023 Hackathon" expressing your willingness to participate. In the email body please provide your name and organization details.

For any queries, please register to the SDMX User Forum. To join the form, please read the registration/sign-up instructions.

JUDGING ARRANGEMENTS:

An Evaluation Committee (from now on, "the Committee") will evaluate the submissions and based on the Acceptance Criteria (see below) filter out submissions that qualify to be further evaluated. The qualifying submissions will be evaluated using the Judgement Criteria (see below) to announce the winner.

Acceptance Criteria:

This will help identify submissions that need to be fully evaluated. The submission must be in GitHub by the due date and meet all terms specified. Any modifications past the deadline will not be considered.

The submissions we be evaluated for the following

- All components used for the project must be Open Source and no licensed software is allowed

- The application can display the sample dashboard when the example specifications file provided as Annex 1 is processed,
- Completeness of the submission
- Technology stack used

Judgement Criteria:

All projects that clear screening, will be evaluated based on the following criteria to ensure they meet all the requirements specified in the terms. Evaluation will be conducted using three perspectives viz. IT, Dashboard Designer (Organization setting up the dashboard), Dashboard Consumer (End user)

- Variety of widgets supported
- Modularity of the project
- Ease of deployment
- Ease of setting up dashboard
- Performance of dashboard (fast page load and refreshes)
- Ease of using the dashboard
- Code quality and useful inline comments
- Scalable to support various SDMX API (version 2.1), beyond those used for building the dashboard

IT perspective; Dashboard Designer perspective; Dashboard Consumer perspective

The committee may decide to have calls with the finalist before deciding on the winner.

Disclaimer:

The virtual hackathon is being organized by the SDMX Sponsors. The organizers are not responsible for any damages or losses that may be incurred by participants during the hackathon.

The Committee may declare the competition void without any obligation on the part of the ILO or other SDMX Sponsor agencies to extend the above-mentioned collaboration contract if none of the applications proposed satisfies the requirements set out in these terms and conditions.

If none of the submissions meet the requirement, the Committee has the right to void the Hackathon and no awards given.

Terms and Conditions:

By participating in the virtual hackathon, you agree to the following terms and conditions:

You must be at least 18 years old to participate.

You must agree to the hackathon's Code of Conduct.

You must use your own equipment and internet connection to participate.

You must not use any third-party software or tools that are not authorized by the organizers.

You must not share any confidential information that you learn during the hackathon.

You agree to release the organizers from any liability for any damages or losses that you may incur during the hackathon.

Intellectual property: All intellectual property rights in any works created during the hackathon will be owned by the organizers.

Privacy: The organizers may collect personal information about participants during the hackathon. This information will be used for the purposes of organizing the hackathon and will not be shared with any third parties.

Liability: The organizers are not liable for any damages or losses that may be incurred by participants during the hackathon, including but not limited to damages caused by software bugs, hardware failures, or network outages.

Code of Conduct:

Be respectful of all participants. This includes respecting people's race, gender, sexual orientation, religion, or any other personal characteristic.

Do not discriminate against anyone. This means that you should not make any discriminatory or offensive remarks or jokes.

Do not engage in any form of harassment or bullying. This includes verbal, physical, or sexual harassment.

Do not share any confidential information that you learn during the hackathon. This includes information about other participants, the organizers, or the hackathon itself.

Here are some additional things to keep in mind:

If you see someone engaging in any inappropriate behaviour, please report it to the organizers immediately.

The organizers have the right to remove any participant from the hackathon if they are found to be violating the code of conduct.

The code of conduct applies to all participants, including sponsors, speakers, and volunteers.

Annex 1: Sample specification YAML file

```
---
DashID: ExampleCL
Rows:
-
    Row: 0
    chartType: TITLE
    Title: " The Labour Market at a glance"
    Subtitle: "Example of a dashboard script with data from Chile"
    Unit:
    unitLoc:
    Decimals:
    LabelsYN:
    legendConcept:
    legendLoc:
    xAxisConcept:
    yAxisConcept:
    downloadYN:
    dataLink:
    metadataLink:
    DATA:
-
    Row: 1
    chartType: VALUE
    Title:  "Unemployment rate"
    Subtitle:  "{$TIME_PERIOD}"
    Unit: "%"
    unitLoc: SUFFIX
```

```
    Decimals: "{$DECIMALS}"
    LabelsYN: No
    legendConcept:
    legendLoc:
    xAxisConcept:
    yAxisConcept:
    downloadYN:
    dataLink:
    metadataLink:
    DATA:
"https://www.ilo.org/sdmx/rest/data/ILO,DF_UNE_DEAP_SEX_AGE_RT,1.0/C
HL.A..SEX_T.AGE_YTHADULT_YGE15?endPeriod=2022&lastNObservations=1"
-
    Row: 1
    chartType: VALUE
    Title: "Number of persons with multiple jobs"
    Subtitle: "{$TIME_PERIOD}"
    Unit:
    unitLoc: HIDE
    Decimals: 0
    LabelsYN: No
    legendConcept:
    legendLoc:
    xAxisConcept:
    yAxisConcept:
    downloadYN:
    dataLink:
    metadataLink:
    DATA:
"https://www.ilo.org/sdmx/rest/data/ILO,DF_EES_TEES_SEX_MJH_NB,1.0/C
HL.A..SEX_T.MJH_AGGREGATE_MULTI?endPeriod=2022&lastNObservations=1 *
{UNIT_MULT}"
-
    Row: 1
    chartType: VALUE
    Title:  "NEET - Youth not in employment, education or training"
    Subtitle:  "{$TIME_PERIOD}"
    Unit: "%"
    unitLoc: SUFFIX
    Decimals: 2
    LabelsYN: No
    legendConcept:
    legendLoc:
    xAxisConcept:
    yAxisConcept:
    downloadYN:
    dataLink:
    metadataLink:
    DATA:
"https://www.ilo.org/sdmx/rest/data/ILO,DF_EIP_NEET_SEX_RT,1.0/CHL.A
..SEX_T?endPeriod=2022&lastNObservations=1"
```

```
-
    Row: 2
    chartType: PIE
    Title:  "Persons outside the labour force by sex"
    Subtitle: "{$TIME_PERIOD}"
    Unit: "%"
    unitLoc: SUFFIX
    Decimals: 0
    LabelsYN:  Yes
    legendConcept: SEX
    legendLoc: RIGHT
    xAxisConcept:
    yAxisConcept:
    downloadYN:
    dataLink:
    metadataLink:
    DATA:
"https://www.ilo.org/sdmx/rest/data/ILO,DF_EIP_TEIP_SEX_AGE_NB,1.0/C
HL.A..SEX_F+SEX_M.AGE_AGGREGATE_TOTAL?endPeriod=2022&lastNObservatio
ns=1&dimensionAtObservation=AllDimensions"
-
    Row: 2
    chartType: VALUE
    Title: "{$MEASURE}"
    Subtitle: "{$TIME_PERIOD}"
    Unit:
    unitLoc: HIDE
    Decimals: "{$DECIMALS}"
    LabelsYN: No
    legendConcept:
    legendLoc:
    xAxisConcept:
    yAxisConcept:
    downloadYN:
    dataLink:
    metadataLink:
    DATA:
"https://www.ilo.org/sdmx/rest/data/ILO,DF_LAI_INDE_NOC_RT,1.0/CHL.A
.?endPeriod=2021&lastNObservations=1"
-
    Row: 2
    chartType: PIE
    Title:  "Employment by economic activity"
    Subtitle:  "{$TIME_PERIOD}"
    Unit: "%"
    unitLoc: SUFFIX
    Decimals: 0
    LabelsYN:  Yes
    legendConcept: ECO
    legendLoc: HIDE
    xAxisConcept:
```

```
     yAxisConcept:
     downloadYN:
     dataLink:
     metadataLink:
     DATA:
"https://www.ilo.org/sdmx/rest/data/ILO,DF_EMP_TEMP_SEX_ECO_NB,1.0/C
HL.A..SEX_T.ECO_SECTOR_X+ECO_SECTOR_SER+ECO_SECTOR_IND+ECO_SECTOR_AG
R?endPeriod=2022&lastNObservations=1"
-
     Row: 3
     chartType: LINES, double
     Title: "Labour Force participation rates"
     Subtitle:
     Unit:
     unitLoc:
     Decimals: 0
     LabelsYN: No
     legendConcept: SEX
     legendLoc: BOTTOM
     xAxisConcept: TIME_PERIOD
     yAxisConcept: OBS_VALUE
     downloadYN:
     dataLink:
     metadataLink:
     DATA:
"https://www.ilo.org/sdmx/rest/data/ILO,DF_EAP_DWAP_SEX_AGE_RT,1.0/C
HL.A..SEX_O+SEX_F+SEX_M+SEX_T.AGE_YTHADULT_YGE15?startPeriod=2010&en
dPeriod=2022"
-
     Row: 3
     chartType: BARS
     Title:  "Status in employment"
     Subtitle:  "{$TIME_PERIOD}"
     Unit:
     unitLoc: HIDE
     Decimals: 0
     LabelsYN: Yes
     legendConcept:
     legendLoc: HIDE
     xAxisConcept:  STE
     yAxisConcept: OBS_VALUE
     downloadYN:
     dataLink:
     metadataLink:
     DATA:
"https://www.ilo.org/sdmx/rest/data/ILO,DF_EMP_TEMP_SEX_AGE_STE_NB,1
.0/CHL.A..SEX_T.AGE_YTHADULT_YGE15.STE_ICSE93_6+STE_ICSE93_5+STE_ICS
E93_4+STE_ICSE93_3+STE_ICSE93_2+STE_ICSE93_1?endPeriod=2022&lastNObs
ervations=1"
```

Annex 2: Sample dashboard visualization

The Labour Market at a glance
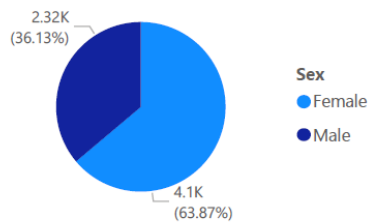### Example of a dashboard script with data from Chile

Unemployment rate
2022

8.3

Number of persons with multiple jobs
2022

182.869
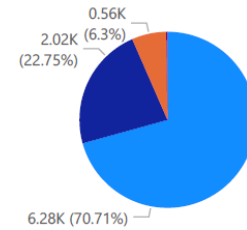
NEET: Youth not in employment, education or training
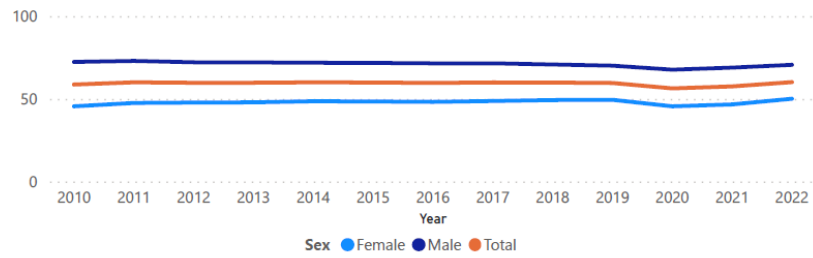### 2022

14.77

Persons outside the labour force by sex
2022

2.32K (36.13%)
4.1K (63.87%)

Sex
● Female
● Male

Inspectors per 10'000 employed persons
2020

1.00

Employment by economic activity
2022

0.56K (6.3%)
2.02K (22.75%)
6.28K (70.71%)

Labour Force participation rates

Sex ● Female ● Male ● Total

Status in employment
2022
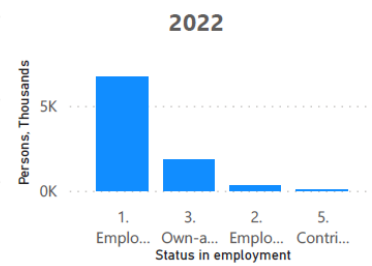
Annex 3: External collaboration contracts

Definition

1. An external collaboration contract is a contract concluded with persons acting in their individual capacity to perform a specific task or set of tasks. These contracts are not employment contracts and remain outside the scope of the Staff Regulations.

2. An external collaboration contract may only be used where there is a specific well-defined task or set of tasks to be performed and the output can be considered as a specific end product (e.g., a study, research assignment or a translation) or where the task assigned is of an advisory or technical nature. Tasks should be performed within a limited and specified period.

Status

3. External collaborators are independent contractors and not ILO officials.

4. An external collaborator may not commit the ILO in terms of its financial or human resources or otherwise, nor represent the ILO, in particular by signing any document on behalf of the ILO, nor supervise ILO staff. These limitations are of particular importance in the context of technical cooperation projects. Where such a commitment is necessary for the performance of a task or completion of an output, an employment contract (fixed-term, short-term or special short-term) represents a more appropriate arrangement.

5. Except in limited situations referred to in this paragraph, external collaborators do not enjoy privileges and immunities in the provision of their services for the Organization. It is only when performing missions for the ILO and so far as is necessary for the effective exercise of their tasks, that external collaborators may, depending on the nature of the activities to be performed, be accorded the status of "expert on mission" within the meaning of paragraph 3 of Annex I to the Convention on the Privileges and Immunities of the Specialized Agencies. As such, they would enjoy the privileges and immunities enumerated in that paragraph to the extent that the State concerned is bound by the Convention.

6. External collaborators are not entitled to a laissez-passer. They may, however, be issued with a document certifying that they are travelling as an "expert on mission" for the ILO. This certification may only be provided by HRD at headquarters or the regional human resources partner.

7. External collaborators are responsible for complying with any tax obligation in connection with the fees paid by the ILO, as well as for obtaining residency and work permits as required by the applicable national law. The ILO may, however, facilitate the issuance of entry visas in the countries where an external collaborator is to travel in the context of the external collaboration contract. To that end, the relevant HR partner at headquarters or the regional HR partner only are authorized to issue official letters supporting the external collaborator's request for a visa.

8. In Switzerland, the ILO may exceptionally make a request for a stay permit (carte de légitimation) for external collaborators who have a requirement to perform tasks on ILO premises specifically mentioned in their contract, for the duration of that requirement.

9. External collaborators are also responsible for their own medical and accident insurance and may be required to provide proof that they are adequately insured.

10. The ILO accepts no liability in the event of death, injury, illness, or any other loss to the external collaborator.

Selection of external collaborators

11. External collaborators should be selected from among highly qualified candidates in a specific field of expertise, on the basis of a reasoned and documented process.

12. External collaboration contracts must not be issued to:
    (d) A close relative 3 of a serving official except under conditions established by Circular No. 666, Series 6, Employment, and other types of contracts with close relatives of ILO officials, of 4 April 2007;
    (e) former officials who left the Office with an agreed termination in accordance with article 11.16 of the Staff Regulations and ILO Circular No. 619, Rev. 1, Series 6, Agreed termination, of 10 December 2004;
    (f) to persons subject to United Nations sanctions.
13. External collaboration contracts requiring presence on ILO premises cannot be awarded to persons not having an adequate stay or work permit of the country in which the premises are situated.
14. Persons holding employment contracts, either full time or part time, and those with internship agreements should not be issued a simultaneous external collaboration contract. External collaboration contracts should not be issued to officials on special leave without pay status or to persons during the six-month break specified in Circular No. 630, Series 6, except under conditions specified in the relevant policies.
15. As regards external collaboration contracts issued for linguistic tasks (translation, editing, revision), departments must ensure that the person proposed to undertake the work is registered in the OFFDOC roster. If not, time must be allowed – prior to the start of the contract – for the process of verification of the professional certification to be completed.

Roles and responsibilities

16. Overall responsibility for the economic and efficient use of resources for external collaboration contracts lies with the programme manager of the unit/external office. Programme managers are responsible for approving external collaboration contracts and are accountable for ensuring that an external collaboration contract is the most appropriate type of contract for the work to be performed.
17. It is the responsibility of the programme manager to prepare detailed terms of reference, outlining the work to be undertaken and the outputs to be delivered, within a specified timetable and an associated payment schedule, prior to the signature of a contract. Upon completion of the tasks commissioned to the external collaborator, the programme manager must issue for future reference a brief commentary with respect to the quality of performance and the results achieved, to be kept in the contract's file. The programme manager is also responsible for certifying that the work product has been delivered prior to payment. Serious cases of breach of contract or unsatisfactory performance must be reported to HRD.
18. The final page of the external collaboration contract has a checklist which the technical unit is required to complete. This checklist is shown in Appendix 1. The checklist ensures transparency in that it requires programme managers, via their funds control officer (FCO), to confirm that they have complied with relevant Office rules governing external collaboration contracts (e.g., prior approval from CABINET, JUR, OFFDOC or BUDGET, as necessary). This does not transfer the responsibility to the FCO; the programme manager is accountable for ensuring that the ILO's rules and regulations are observed. The checklist must be completed before an external collaboration contract is approved.
19. FCOs must ensure that the programme manager signs a paper copy of the budget sheet, which must be kept with the file copy of the external collaboration contract.
20. Units/external offices should ensure that copies of all contracts can be easily made available, for periodic monitoring.

Contracts

21. No commitment on behalf of the ILO must be made prior to the signature of the external collaboration contract. All external collaboration contracts must be prepared and signed by all parties before work commences. At locations with access to IRIS, all contracts must be raised through the system unless a specific authorization is received from BUDFIN. At all other locations, an obligation must be raised in FISEXT to record the liability when the contract is signed.

22. Each external collaboration contract must have a well-defined output. There are, however, some tasks and situations which may be assimilated to ongoing work of the Office. External collaborators in these categories may be called upon to work on office premises on an ad hoc but frequent basis. Such external collaborators must not work on a regular schedule in the same manner as ILO officials. Examples of such situations include those where persons are contracted principally to perform tasks of information technology consultants, audio-visual technicians, medical personnel for support to the Health Services Unit, linguistic personnel (freelance translators, editors, revisers, proof-readers). The services of these persons may be contracted by the Office for extended periods of time, as their work is either that of an independent contractor or of a regular seasonal nature. The requirement to perform the task on Office premises has to be specifically mentioned in the external collaboration contract.

23. Office space, facilities and services should not be provided on an ongoing basis unless the programme manager requests approval from HRD or the regional HR partner and provides justification for the request.

24. Availability to any time-limited "guest" email account is subject to the rules set up by Office Procedure, The use of email and Internet in the ILO, IGDS No. 15 (version 1), of 19 June 2008.

25. External collaboration contracts must be prepared on a standard format established by the Office (Appendix II). They consist of terms of reference negotiated between the Office and the external collaborator, and the standard clauses. Any departure from the standard clauses must be approved by the Office of the Legal Adviser (JUR).

26. During the negotiations it should be particularly emphasized that all intellectual property rights arising from the contract are vested in the ILO, 5 although authorship can be acknowledged in an ILO publication.

Fees

27. All external collaboration contracts must be made out for an all-inclusive sum, in order to avoid any subsequent increase in the amount to be paid. This sum represents a gross amount and should be normally paid upon a satisfactory completion of the task.

28. Depending on the circumstances, the amount may be arrived at on the basis of a combination of fees, any travel and subsistence expenses, and any other expenses specifically relating to tasks to be performed.

29. A breakdown of the estimates for the work to be performed, based on the terms of reference prepared by the Office, is an internal document and will normally not be included in the contract. This breakdown must indicate the basis for calculation of the fee (e.g., the number of hours or days required to complete the output, or the number of words to be translated, and the applicable rate), as well as any travel costs or other expenses that are to be incurred in the delivery of the outputs.

30. Programme managers must exercise judgement and discretion in determining the level of fees and expenses to be paid to an external collaborator, taking into account the nature, level of complexity and difficulty of the tasks. Programme managers are responsible for ensuring that fees paid to external collaborators are reasonable. Each contract must be accompanied by a

justification for the level of fee proposed, such as an indication of the local market rates for comparable work, or the fact that UN rates for external collaborators have been established at the location.

31. Any travel-related costs to be included in the total sum cannot exceed those payable to an ILO official on the same itinerary. The travel agency may be requested to provide estimates and travel options for travel by non-staff members.

32. Payment is normally made in full at the end of the contract when the work has been completed, the output submitted and judged satisfactory. Interim payments may be allowed in conformity with Financial Rule 7.50, subject to satisfactory completion of work in accordance with the payment schedule set out in the external collaboration contract. Regular monthly payments are not normally appropriate.

33. No payment shall be processed without a request (invoice) having been received from the external collaborator.

Travel and security

34. External collaborators are responsible for making their own travel arrangements. They will meet their own related expenses, including meals, lodging, transfer, etc. unless otherwise specified in the external collaboration contract.

35. Where an external collaborator is expected to undertake travel which was not foreseen at the time of signature of the contract, the contract should be amended to reflect this new requirement, or a separate contract issued.

36. External collaborators whose tasks entail travel must comply with all applicable ILO security procedures and rules, notably those governing security clearance and training. 7 External collaborators benefit from the security arrangements and protection provided by the United Nations Security Management Network (UNSMN) at duty stations which are either not under a security level or up to security level four (4). No external collaboration contracts may be issued for work that entails travel to a location at security level five (5) or higher.

37. If external collaborators for whom travel has been paid by the ILO find themselves at a location where security level five (5) or six (6) is declared during their presence there, immediate arrangements must be made in liaison with SERVSEC to ensure that they leave the duty station as soon as possible. Programme managers are accountable for any breach of the security provisions governing external collaboration contracts.

Declaration of interest

38. Programme managers are reminded that external collaborators are required to disclose any circumstances that could give rise to a potential conflict of interest in relation to the contract or tasks to be performed.

39. The programme manager must assess the information disclosed and decide what actions should be taken when a potential conflict of interest appears to exist. In case of doubt, the Ethics Officer should be consulted.

Code of conduct

40. Although external collaborators are not subject to the same standards of conduct as ILO officials, their standard of conduct is subject to conditions set forth in the standard clauses. Furthermore, provisions of Office Directive, Anti-fraud policy, IGDS No. 69 (version 1), of 17 June 2009, also apply to external collaborators.

Termination and modification of contract

41. The programme manager shall measure the quality of the work performed and take into account the goals established in the terms of reference as well as compliance with contracted delivery dates.

42. In the event the external collaborator fails to perform satisfactorily or otherwise breaches the terms of the contract, the ILO will be entitled to request a correction or modification of the work done, or to terminate the contract in writing with immediate effect.

43. In the event an external collaborator is unable to complete the work, payment can be made on a prorated basis for the actual amount of work satisfactorily completed, or, alternatively, based on the actual number of days worked to the satisfaction of the ILO.

44. Prior to proceeding to early termination due to the failure to perform satisfactorily or other breach of contract, the programme manager should consult JUR with respect to, among other questions, whether the external collaborator should be compensated for work performed, whether the ILO should seek any reimbursement of funds or whether the ILO should be compensated for any costs incurred as a result of the contract breach.

45. Any early termination process should be properly documented and stored in the archives for possible verification.

46. If goals have not been met satisfactorily for reasons which are exclusively attributable to the external collaborator, no further contracts should in principle be granted to that person.

47. If the nature of the work substantially changes, the terms of reference must be amended by express mutual written agreement, or a new external collaboration contract must be signed by the parties.

Simultaneous/overlapping external collaboration contracts

48. An external collaborator may hold simultaneous or overlapping contracts with different technical units/external offices as long as the units/offices concerned provide written assurances to each other that neither end product will be negatively impacted by the other contract. This written assurance must be electronically attached to the contract concerned in IRIS or printed and filed with the contract when using FISEXT.

49. Where a technical unit/external office wishes to entrust a person already holding an external collaboration contract with additional work, a second separate contract must, for reporting purposes, be prepared if the task relates to a different outcome and if the contract is issued using a different budgetary code.