SDMX Converter

SDMX Converter

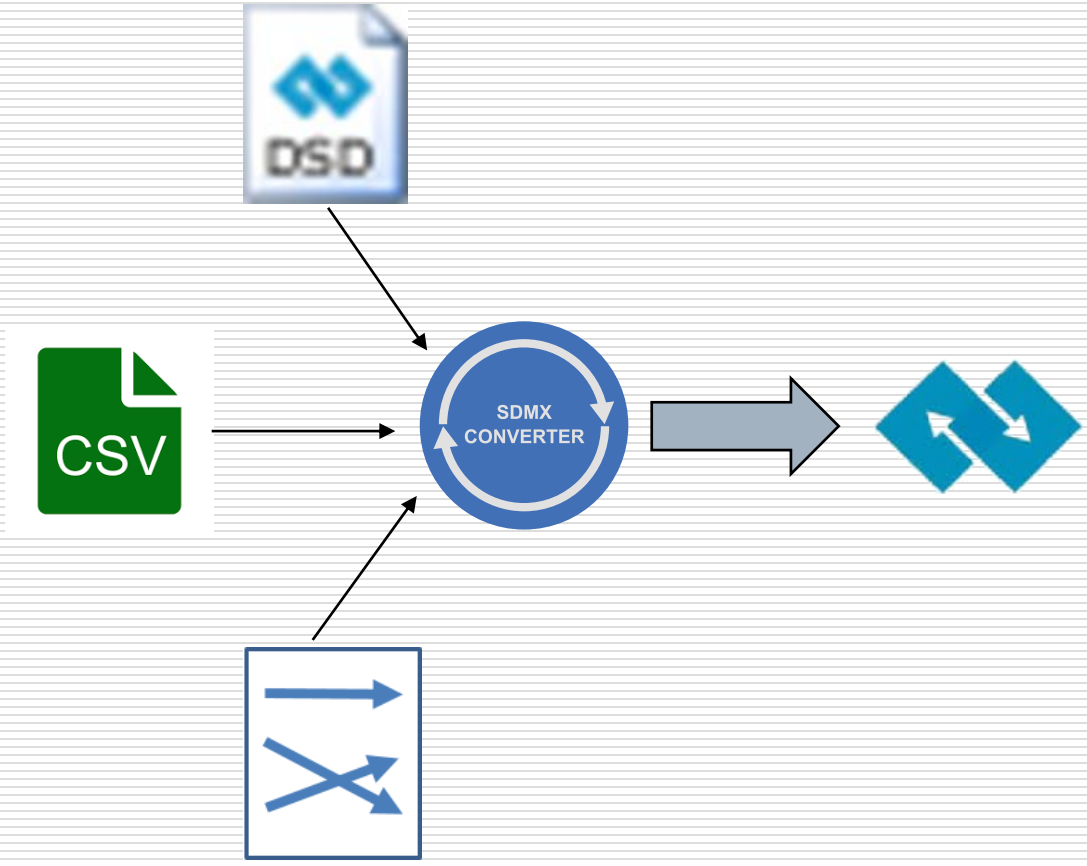
- Software developed by Eurostat
- Can be used to convert data from a variety of formats into SDMX and vice versa
- Supports CSV, Excel, DSPL, and others
- Can be used to transform….
  - Non-SDMX data to SDMX
  - SDMX to non-SDMX
  - SDMX format to another SDMX format

SDMX Converter: Applications

- SDMX Converter is available as
  - Desktop application with a Graphical User Interface
  - Command-line application
  - Web service
  - Java library
  - Web application

- Download from https://circabc.europa.eu/ui/group/088149e5-0472-405b-839b-57d5970052cc/library/76a63fc2-3d22-42cc-85f2-4f6f30b4d8eb?p=1&n=10&sort=modified_DESC

Converting data to SDMX



- To transform data to SDMX using the SDMX Converter, you need
  - Source data as CSV, DSPL, Excel, etc.
  - A Data Structure Definition (DSD) according to which the SDMX dataset will be structured
  - Mappings that show how the source data maps to the concepts and codes of the Data Structure Definition
  - As always in setting up SDMX exchange, configuring mappings takes the most time and effort

Using SDMX Converter with Excel

- Data and mappings can be placed into the same spreadsheet
  - Mappings can also be supplied from an external file
- Additional information can be added to facilitate data entry
  - E.g. code lists for validation and display of descriptions

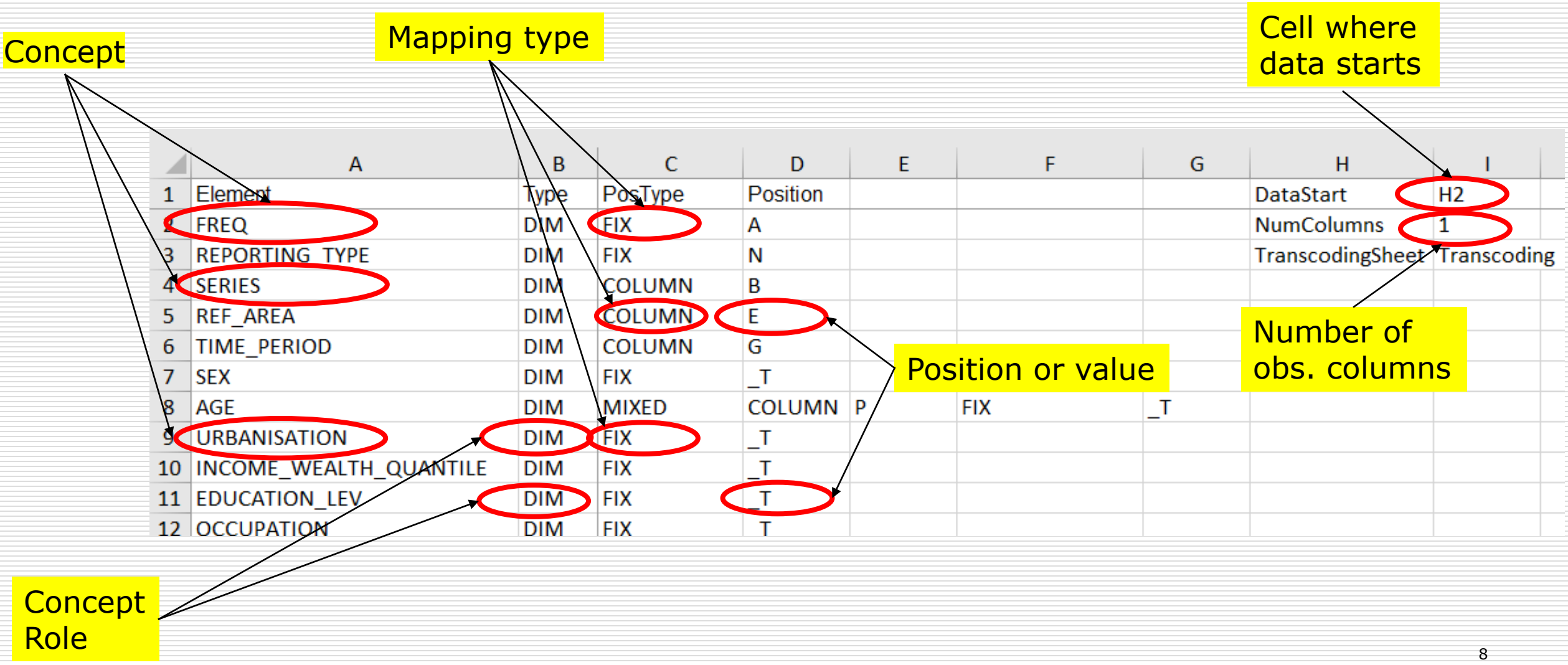
Worksheet names

- Worksheet named **Parameters** contains mappings
  - Shows how cells, rows, and columns map to the DSD dimensions and attributes
- Worksheet names starting with **VAL** are ignored
  - Can be used to store code lists or other ancillary information
- Transcoding worksheet names must start with **Trans**
- If a single parameter sheet is use as above, all other worksheets are considered data and will be processed
- Multiple parameter sheets can be used if worksheets have different mappings.
  - In that case, worksheet named **Parameter_mapping** must show which parameter worksheets apply to which data worksheets
  - Parameter worksheet names must start with **Parameter**

Exercise 4: Using SDMX Converter

- Use SDMX Converter to retrieve data from a pre-mapped spreadsheet and convert it to SDMX

Excel Mappings: the Parameters worksheet



	A	B	C	D	E	F	G	H	I
1	Element	Type	PosType	Position				DataStart	H2
2	FREQ	DIM	FIX	A				NumColumns	1
3	REPORTING_TYPE	DIM	FIX	N				TranscodingSheet	Transcoding
4	SERIES	DIM	COLUMN	B					
5	REF_AREA	DIM	COLUMN	E					
6	TIME_PERIOD	DIM	COLUMN	G					
7	SEX	DIM	FIX	_T					
8	AGE	DIM	MIXED	COLUMN	P	FIX	_T		
9	URBANISATION	DIM	FIX	_T					
10	INCOME_WEALTH_QUANTILE	DIM	FIX	_T					
11	EDUCATION_LEV	DIM	FIX	_T					
12	OCCUPATION	DIM	FIX	_T					

Excel mappings worksheet

- **Element**: name of the DSD concept
- **Type**: role of the concept
  - **DIM:** Dimension
  - **ATT:** attribute
- **PosType**: Mapping or position type
- **Position**: position or value
- **DataStart**: the first cell containing an observation
- **NumColumns**: number of observations per row

Column PosType: mapping or position type

- The following mapping/position types are supported:
  - **CELL**
  - **ROW**
  - **COLUMN**
  - **FIX**
  - **OBS_LEVEL**
  - **MIXED**
  - **SKIP**

Mapping type: CELL

- The value for the entire worksheet is specified in the cell provided in the column **Position**
- E.g. if the worksheet is expected to only contain data for a single indicator, its code can be provided in a cell.

	C	D	E
1	**15.1.1 Forest area as a proportion of total land area**	SERIES	AG_LND_FRST
2	*(in percents)*		
3	**Items**	**REF_AREA**	**2011**
4	**Kyrgyz Republic**	**KG**	**5.6**
5	Batken oblast	KG05	9.8
6	Djalal-Abad oblast	KG03	4.1
7	Ysyk-Kul oblast	KG02	3.2
8	Naryn oblast	KG04	3.1
9	Osh oblast	KG06	6.4
10	Talas oblast	KG07	4.5
11	Chui oblast	KG08	2.2
12	Approved by the Decree of the Government of the Kyrgyz Republic dated July 26, 2011 No. 407		

Mapping type: ROW

- Values for the concept are stored in the row specified in column **Position**

	C	D	E	F	G	H	I
1	**1.1.1 Proportion of population living below the international poverty line (1.9 USD)**						
2	*(as a per cent to number of population)*						
3		SERIES:	SI_POV_DAY	AGE:	_T	UNIT	PT
4		URBANISATION:	_T	EDU.LEV	T	UNIT M.	0
5	**Items**	**REF_AREA**	**2007**	**2008**	**2009**	**2010**	**2011**
6	**Kyrgyz Republic**	KG	**0.13**	**0.09**	**0.29**	**0.28**	**0.01**
7	Batken oblast	KG05	0.00	0.27	0.00	0.21	0.00
8	Djalal-Abad oblast	KG03	0.20	0.00	0.00	0.22	0.00
9	Ysyk-Kul oblast	KG02	0.05	0.34	0.58	0.11	0.00
10	Naryn oblast	KG04	0.13	0.63	0.03	3.46	0.31
11	Osh oblast	KG06	0.33	0.03	0.00	0.09	0.00

Mappings type: COLUMN

- Values for the concept are stored in the column specified in column **Position**

	C	D	E	F	G	H	I
1	**1.1.1 Proportion of population living below the international poverty line (1.9 USD)**						
2	*(as a per cent to number of population)*						
3		SERIES:	SI_POV_DAY	AGE:	_T	UNIT	PT
4		URBANISATION:	_T	EDU.LEV	_T	UNIT M.	0
5	**Items**	**REF_AREA**	**2007**	**2008**	**2009**	**2010**	**2011**
6	**Kyrgyz Republic**	KG	**0.13**	**0.09**	**0.29**	**0.28**	**0.01**
7	Batken oblast	KG05	0.00	0.27	0.00	0.21	0.00
8	Djalal-Abad oblast	KG03	0.20	0.00	0.00	0.22	0.00
9	Ysyk-Kul oblast	KG02	0.05	0.34	0.58	0.11	0.00
10	Naryn oblast	KG04	0.13	0.63	0.03	3.46	0.31
11	Osh oblast	KG06	0.33	0.03	0.00	0.09	0.00

Mapping type: COLUMN (2)

- Also used with record-based representation, when each row contains one record or observation, and each column holds values for one concept.

	A	B	D	E	F	G	H	I	J	K	L	M	N
1	M49 Code	Series Code	Indicator R	Country	Disaggre	Year	IMR	Age Group	Unit	Nature	Footnote	Source Det	Time Detail
2	4	SH_DYN_IM	3.2.1	Afghanistar	BOTHSEX	2000	90.8	<1Y	PER_1000_LIVE	NA		Source: Uni	2000
3	8	SH_DYN_IM	3.2.1	Albania	BOTHSEX	2000	23.1	<1Y	PER_1000_LIVE	NA		Source: Uni	2000
4	12	SH_DYN_IM	3.2.1	Algeria	BOTHSEX	2000	33.9	<1Y	PER_1000_LIVE	NA		Source: Uni	2000
5	20	SH_DYN_IM	3.2.1	Andorra	BOTHSEX	2000	4	<1Y	PER_1000_LIVE	NA		Source: Uni	2000
6	24	SH_DYN_IM	3.2.1	Angola	BOTHSEX	2000	122.9	<1Y	PER_1000_LIVE	NA		Source: Uni	2000
7	28	SH_DYN_IM	3.2.1	Antigua an	BOTHSEX	2000	13.1	<1Y	PER_1000_LIVE	NA		Source: Uni	2000
8	32	SH_DYN_IM	3.2.1	Argentina	BOTHSEX	2000	17.3	<1Y	PER_1000_LIVE	NA		Source: Uni	2000
9	51	SH_DYN_IM	3.2.1	Armenia	BOTHSEX	2000	26.6	<1Y	PER_1000_LIVE	NA		Source: Uni	2000
10	36	SH_DYN_IM	3.2.1	Australia	BOTHSEX	2000	5.1	<1Y	PER_1000_LIVE	NA		Source: Uni	2000
11	40	SH_DYN_IM	3.2.1	Austria	BOTHSEX	2000	4.6	<1Y	PER_1000_LIVE	NA		Source: Uni	2000

Mapping type: FIX

- Fixed value for the entire dataset is stored in the column **Position** and does not appear in the data spreadsheet
  - E.g. if the data is always expected to be annual, frequency can be coded for the entire spreadsheet

	A	B	C	D
1	Element	Type	PosType	Position
2	FREQ	DIM	FIX	A

Mapping type: MIXED

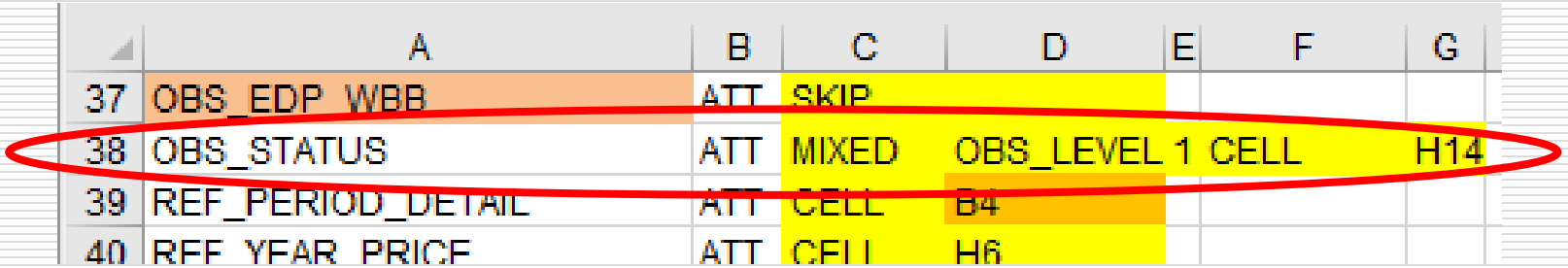
- The concept value is conditional
- Can be used to provide a default value

	A	B	C	D	E	F	G
1	Element	Type	PosType	Position		DataStart	K12
2	FREQ	DIM	FIX	A		NumColumns	1
3	REPORTING_TYPE	DIM	CELL	B4			
4	SERIES	DIM	COLUMN	2			
5	REF_AREA	DIM	MIXED	CELL	B3	FIX	TH
6	TIME_PERIOD	DIM	COLUMN	4			

- "Use cell B3 for concept REF_AREA. If the cell is empty, use fixed value TH"

Mapping type: OBS_LEVEL

- Can be used in to specify attributes attached at the observation level relative to the cell containing the observation.
  - E.g. when each row has multiple observations *and their attributes*.



	A	B	C	D	E	F	G
37	OBS_EDP_WBB	ATT	SKIP				
38	OBS_STATUS	ATT	MIXED	OBS_LEVEL 1 CELL			H14
39	REF_PERIOD_DETAIL	ATT	CELL	B4			
40	REF_YEAR_PRICE	ATT	CELL	H6			

- "For attribute OBS_STATUS, use cell that is 1 column to the right of the cell containing the observation value. If that cell is empty, use the value in cell H14."

Mapping type: SKIP

- The concept value is not mapped
- Can only be used with optional attributes

18	NATURE	ATT	FIX	C
19	SOURCE_DETAIL	ATT	SKIP	
20	COMMENT_OBS	ATT	SKIP	

Using DSDs and dataflows

- SDMX Converter can use either a DSD or a dataflow to validate or convert datasets
- Using datataflows is typically more strict because content constraints are usually attached to dataflows
  - For example, a structurally valid national SDG dataset will pass validation against the SDG DSD and country global dataflow DF_SDG_GLC, but will fail validation against the harmonized global dataflow DF_SDG_GLH
  - In addition, a structurally valid national SDG dataset will fail validation against the country dataflow DF_SDG_GLC if it contains invalid relationships among dimensions, e.g. Female sex with indicator “Land area covered by forest”.

Using SDMX registries

- SDMX Converter can load structures from either a file or a registry
- If structure is loaded from a file, it must be complete with all required references.
  - At least, the file must contain a DSD, its Concept Scheme, and all reference code lists
- If structure is loaded from a registry, all referenced structures will be used automatically
- Addresses of commonly used registries are provided by default. Address of any registry-compliant web service can be entered manually.

Exercise 5: Converting data using dataflows and content constraints

- Compare validation against the SDG DSD vs validation against the SDG dataflows.

Exercise 6: Mapping an Excel file

- Map a spreadsheet to the SDG DSD and use SDMX Converter to retrieve and convert the data

THANK YOU!