



EUROPEAN CENTRAL BANK

EUROSYSTEM

Silvia Giacinti

Principal Economist-Statistician

DG-S

Dominik Lin

Economist-Statistician

DG-S

BIRD methodology – Mappings

The multiple codes problem

Several different codification systems exist...

BSI

BS_COUNT_SECTOR BS counterpart sector
2100 - General Government
1100 - Central Bank (S.121)
00BK - Non-resident banks

AnaCredit

INSTNL_SCTR Institutional sector
S13 - Central government (excluding social security funds)
S121 - Central banks
122_A - Credit institutions

SHS

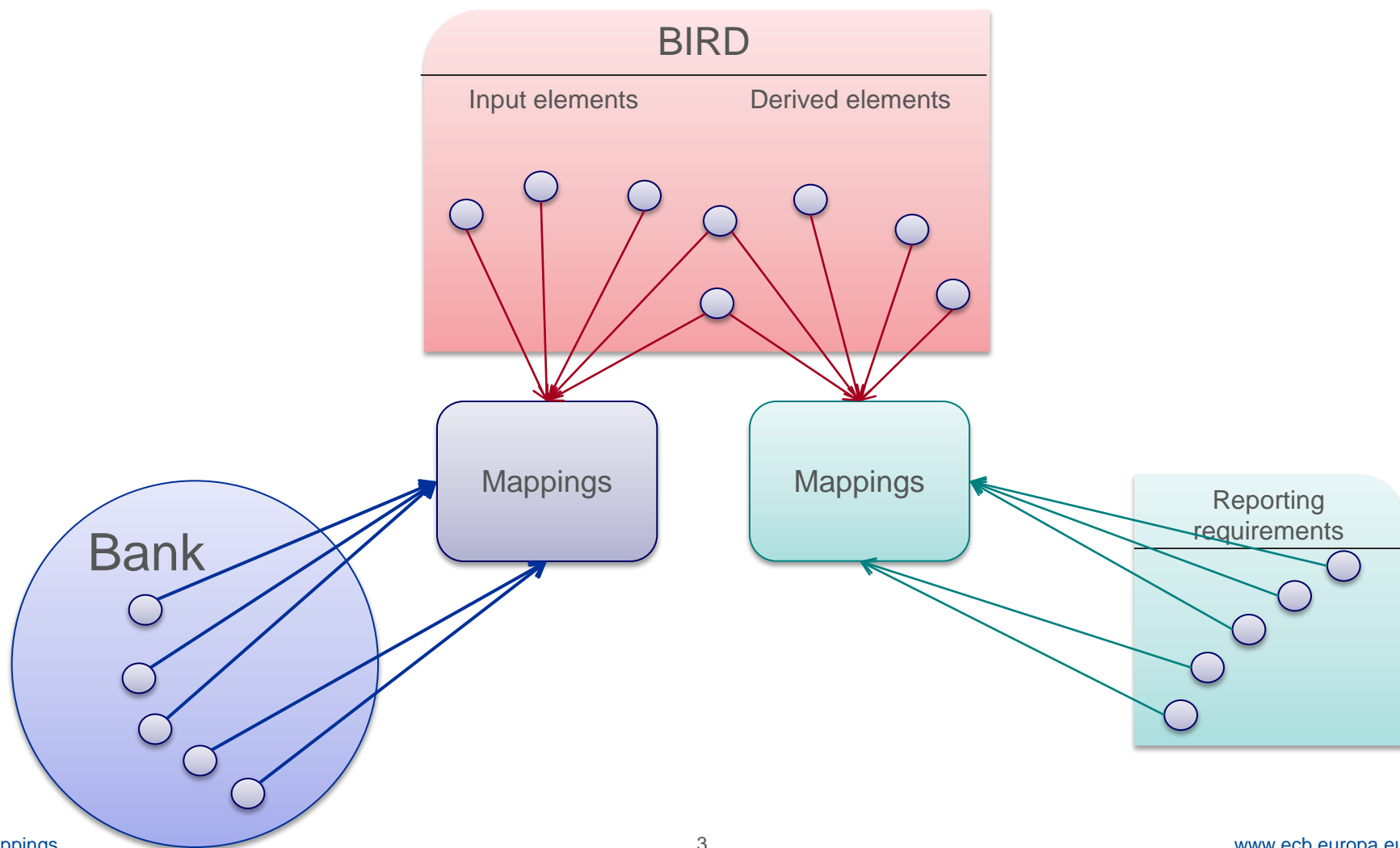
ISSUER_SECTOR Issuer ESA 2010 sector
S_13 - General government
S_121 - The central bank
S_122 - Deposit-taking corporations except the central bank

FINREP

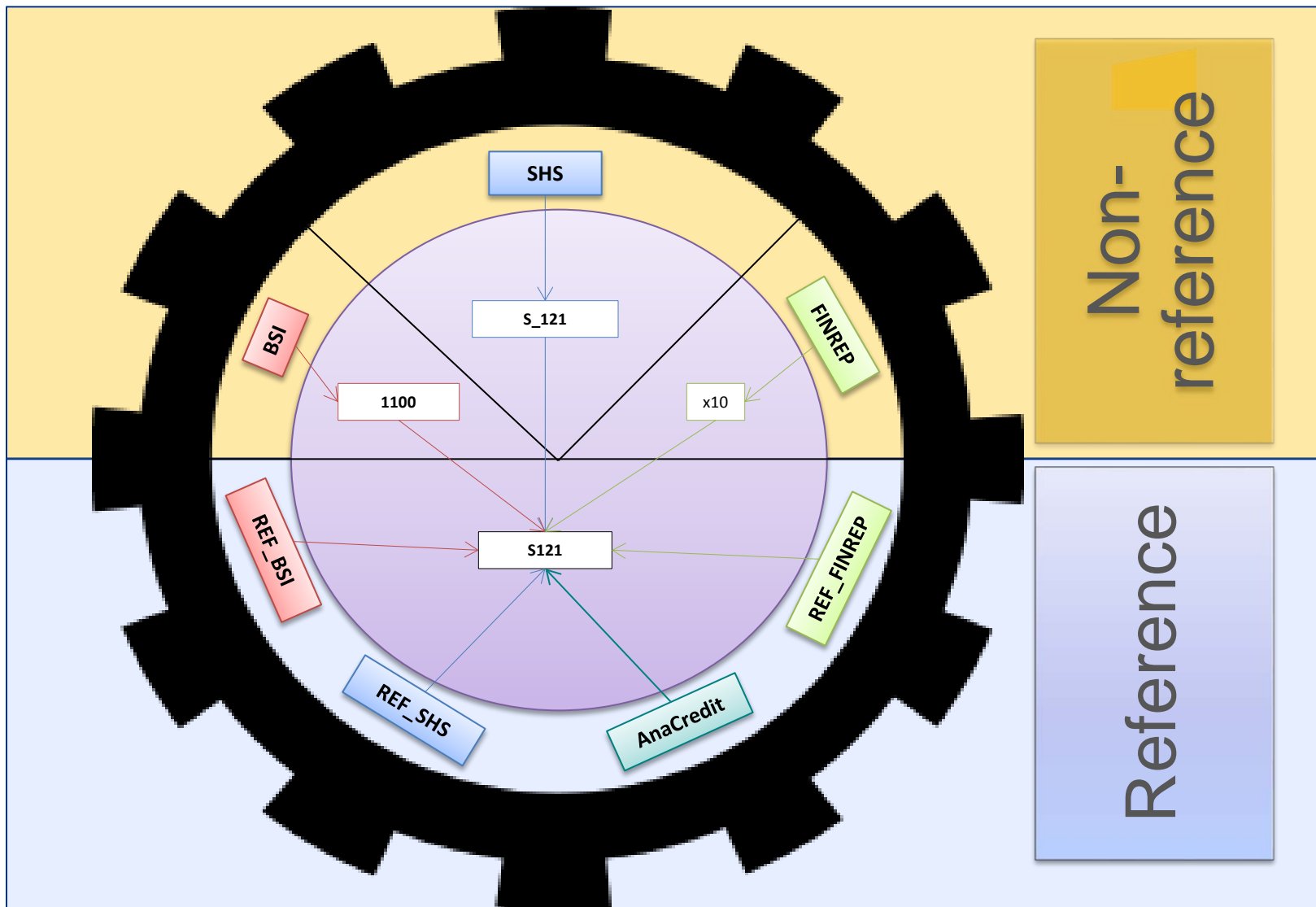
CPS Counterparty sector
x1 - General governments
x10 - Central banks
x12 - Credit institutions

... But the input layer should use one single set of codes!

Mappings and external codifications

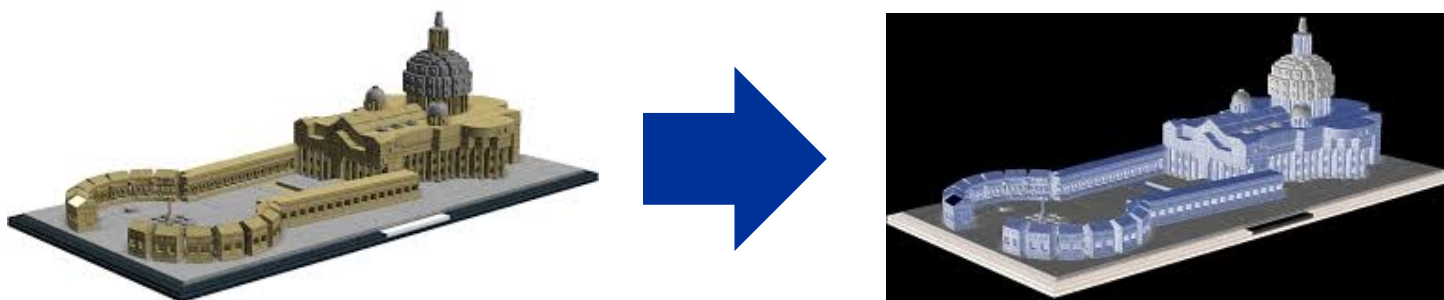


Reference / non-reference



Mappings

- Mappings provide the relation between codification systems
- They allow converting one dataset from one codification system to another



Mappings: Dealing with complexity

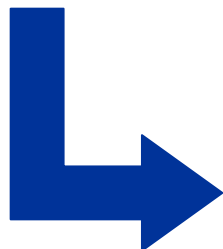
- Mappings are complex because:
 - They are n to m (e.g. it is possible to map from 2 variables to 3 variables)
 - The same element is sometimes used with different meanings (same element mapped more than once)
- 4 types of mapping
 - Algorithm (for non-enumerated variables)
 - Equivalence table (for enumerated variables)
 - Deletion (to delete a variable not needed in the output)
 - Variable set (for measure dimensions)

Mappings: A realistic example

Data structures

CUBE ID: ABC

Variable	Subdomain	Role
FREQ	M - Monthly	D
AAA_ISIN	String	D
AAA_INST_TYP	F1 - Short term debt security F2 - Long term debt security	O
AAA_MATURITY_DATE	yyyy_mm_dd	O

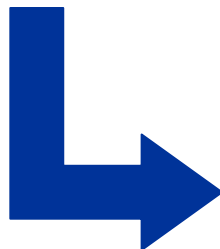


CUBE ID: REF_ABC

Variable	Subdomain	Role
ISIN	String	D
TYP_INSTRMNT	1 - Debt security	O
ORGNL_MTRTY	1 - Short term 2 - Long term	O
DT_MTRTY	dd_mm_yyyy	O

FREQ	AAA_ISIN	AAA_INST_TYP	AAA_MATURITY_DATE
M	AB123456789	F1	2016_10_05
M	CD123456789	F1	2052_01_31
M	EF123456789	F2	2019_02_29

Data instances



ISIN	TYP_INSTRMNT	ORGNL_MTRTY	DT_MTRTY
AB123456789	1	1	05/10/2016
CD123456789	1	1	31/01/2052
EF123456789	1	2	29/02/2019

Mappings: Technical solution

MAPPING_DEFINITION

MAPPING_ID	MAPPING_TYPE	VARIABLE_EQUIVALENCE_TABLE_ID	MEMBER_EQUIVALENCE_TABLE_ID	ALGORITHM
1	Deletion	1		
2	Algorithm	2		=
3	Equivalence table	3	1	
4	Algorithm	4		ChangeDateFormat

VARIABLE_MAPPING

MAPPING_ID	VARIABLE_ID	IS_SOURCE
1	FREQ	TRUE
2	AAA_ISIN	TRUE
2	ISIN	FALSE
3	AAA_INST_TYPE	TRUE
3	TYP_INSTRMNT	FALSE
3	ORGNL_MTRTY	FALSE
4	AAA_MATURITY_DATE	TRUE
4	DT_MTRTY	FALSE

MEMBER_MAPPING_ITEM

EQUIVALENCE_TABLE_ID	EQUIVALENCE_TABLE_ROW	VARIABLE_ID	MEMBER_ID	IS_SOURCE
1	1*		F1	TRUE
1	1	TYP_INSTRMNT	1	FALSE
1	1	ORGNL_MTRTY	1	FALSE
1	2*		F2	TRUE
1	2	TYP_INSTRMNT	1	FALSE
1	2	ORGNL_MTRTY	2	FALSE