EUROPEAN STATISTICAL SYSTEM

European Statistical System

SDMX – Data, metadata and exchange system

General concepts

Statistical Data and Metadata eXchange (SDMX) standardises the way data are organised and exchanged and provides international guidelines on how to shape the data.

What

SDMX provides

* A logical model to describe statistical data, together with guidelines on how to structure the content
* A standard for automated communication from machine to machine
* A technology supporting standardised IT tools that can be used by all parties involved in the data exchange and processing

Why?

The implementation of a *SDMX content-oriented* pilot project aims to enhance the harmonization of both *structural* and *reference* metadata between European Member States

SDMX allows the exchange of metadata between European Member States and other European institutional bodies

Why?

However, SDMX implementation depends on the interaction between the national and European levels.

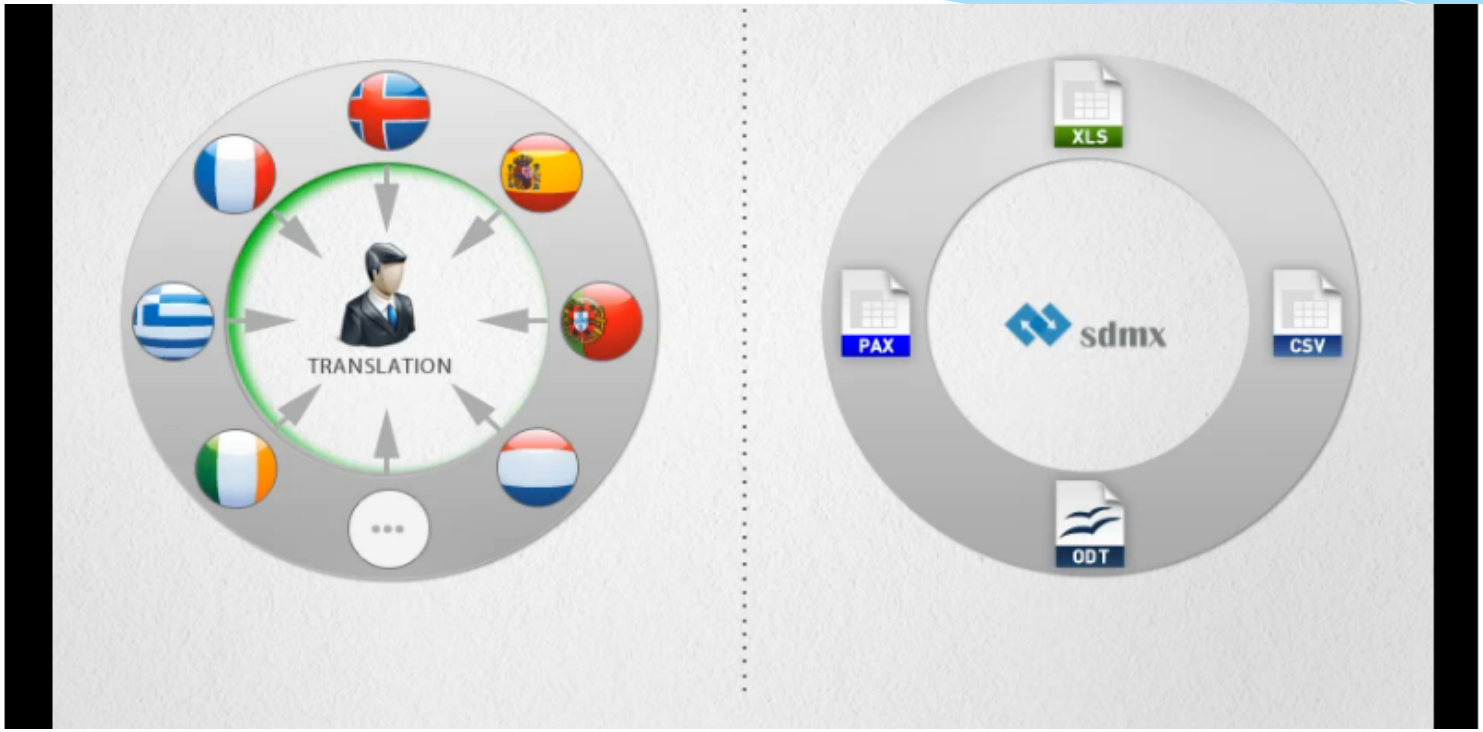
It implies that EU MS should be able to provide metadata to EU institutions, extracting information directly from their national metadata system, applying standards concepts using a common terminology and standardized formats.

Consequently, each organization (national as well as European) will enable to document methodologies, describe the production process of data, and assess the quality of data sets.

Why

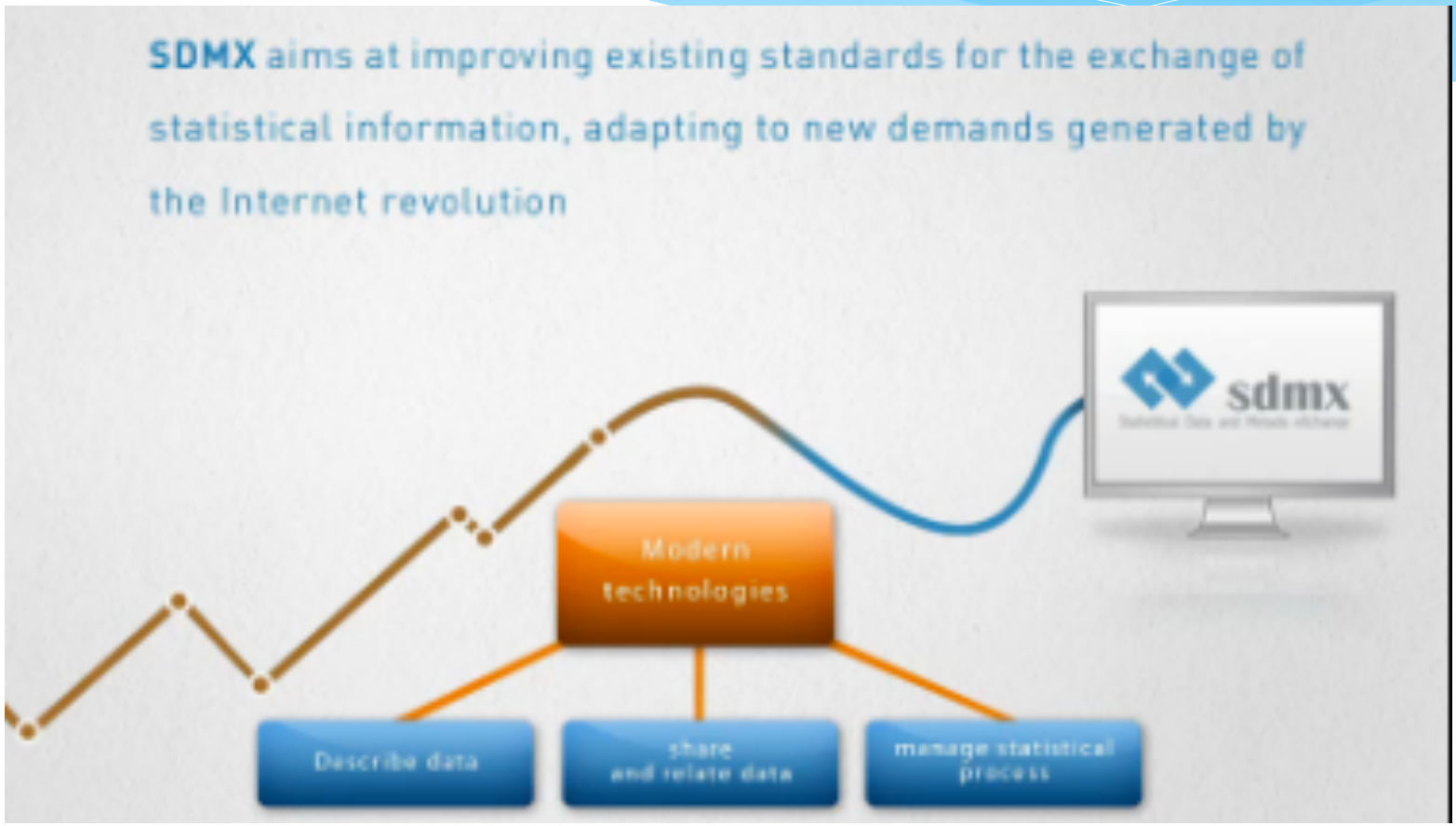
For this purpose, the SDMX, improving metadata exchange and sharing, will increase comparability reducing discrepancies between national statistical systems.

SDMX approach



SDMX approach

SDMX approach



SDMX structure

Two main components of SDMX can be identified:

* SDMX information model
* SDMX Data exchange

SDMX structure

SDMX information Model

* An information model provides a format to describe a domain (irrespective of the implemented hardware/software), specifying concepts, relationships, constraints, rules and interoperability between data.

* The mapping of the information model generates data models.

SDMX structure

SDMX Data exchange

* Interoperability refers to the ability of diverse systems to work together.
* If two or more systems are able to communicate and exchange data, a syntactic interoperability exists.
* If two or more systems are capable to automatically interpret the exchanged information and produce expected and pre-defined results – it means that what is sent is the same as what is understood – a semantic interoperability has been created.

SDMX Information Model

SDMX Metadata

Statistical concepts (metadata) are defined to understand the meaning of numerical observations.

SDMX - Metadata

SDMX Content-Oriented Guidelines recommend practices for creating interoperable data and metadata sets using the SDMX technical standards.

They are intended to be applicable to all statistical subject-matter domains.

The Guidelines focus on harmonising specific concepts and terminology that are common to a large number of statistical domains.

SDMX Metadata structure

* Based on the SDMX-COG, Eurostat selected 21 of the 66 cross-domain concepts in order to create a structure to be used for the dissemination of reference metadata on its website. These 21 concepts have also been further broken down into several sub-concepts.
* The generated complete structure is called Euro-SDMX Metadata Structure (ESMS) and is in use in Eurostat since 2010 where it fully replaced the previous structure in place: the Statistical Data Dissemination Standard (SDDS)

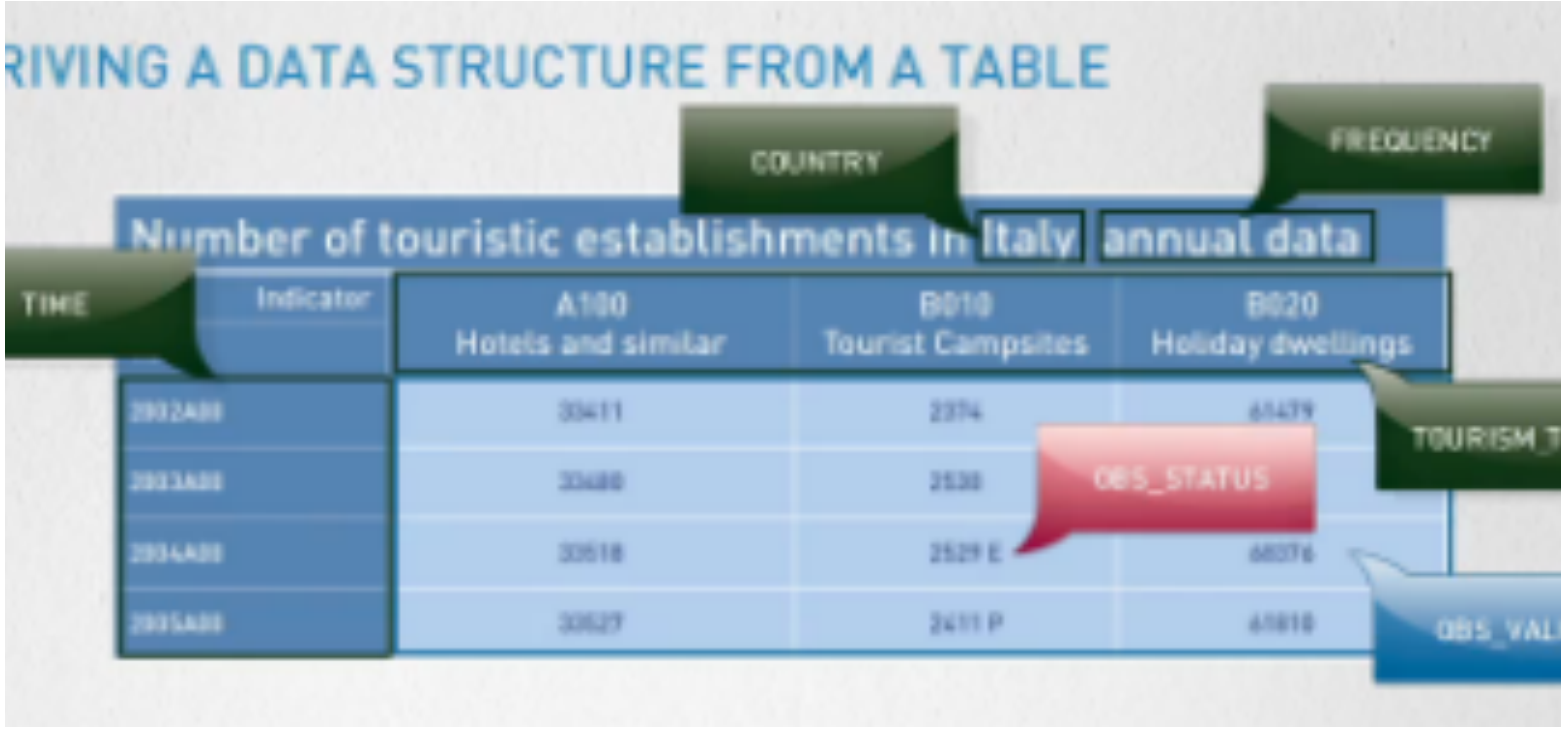
Data Structure Definition

Data Structure Definition

Number of touristic establishments in Italy, annual data

Indicator / Time	A100 Hotels and similar	B010 Tourist Campsites	B020 Holiday dwellings
2002A00	33411	2374	61479
2003A00	33480	2530	58526
2004A00	33518	2529 E	68376
2005A00	33527	2411 P	61810

Data Structure Definition



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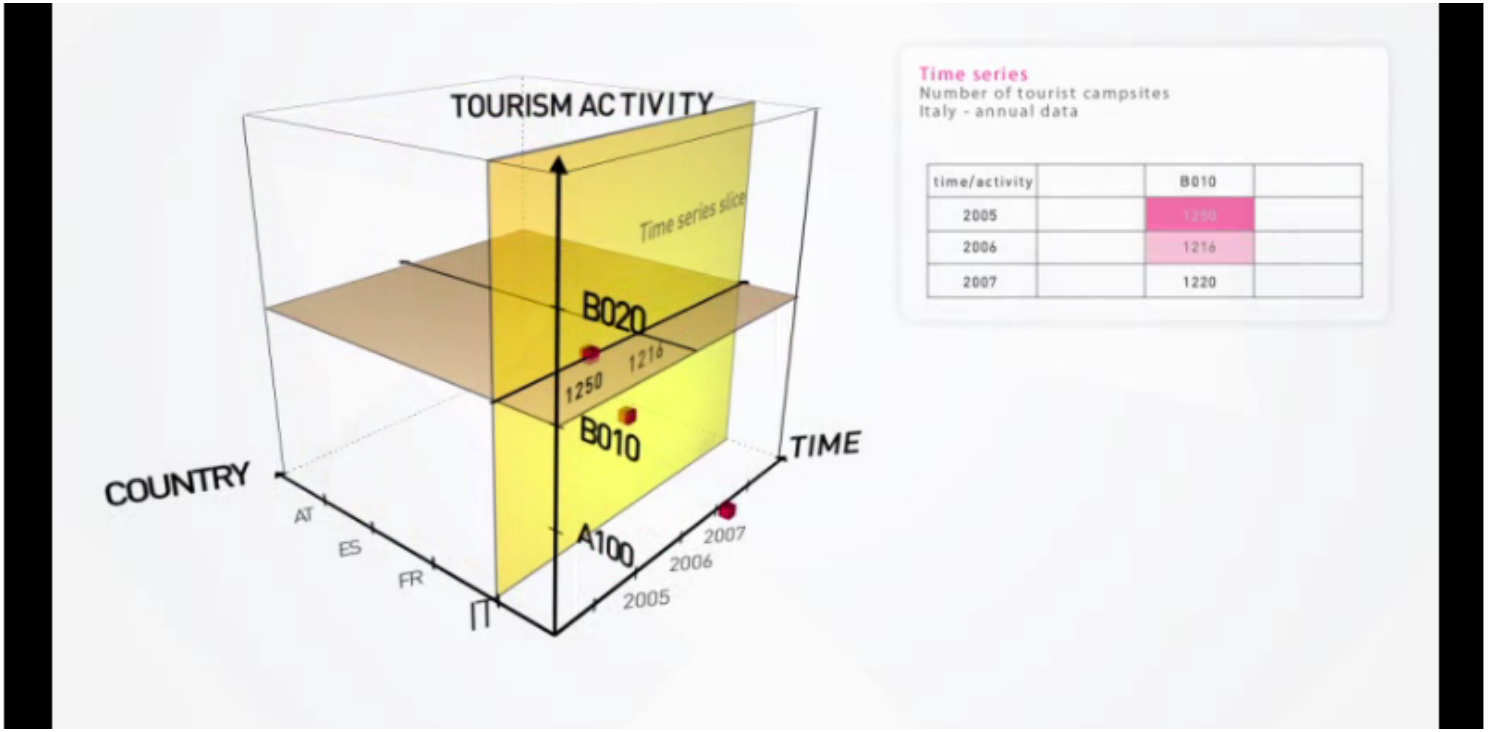
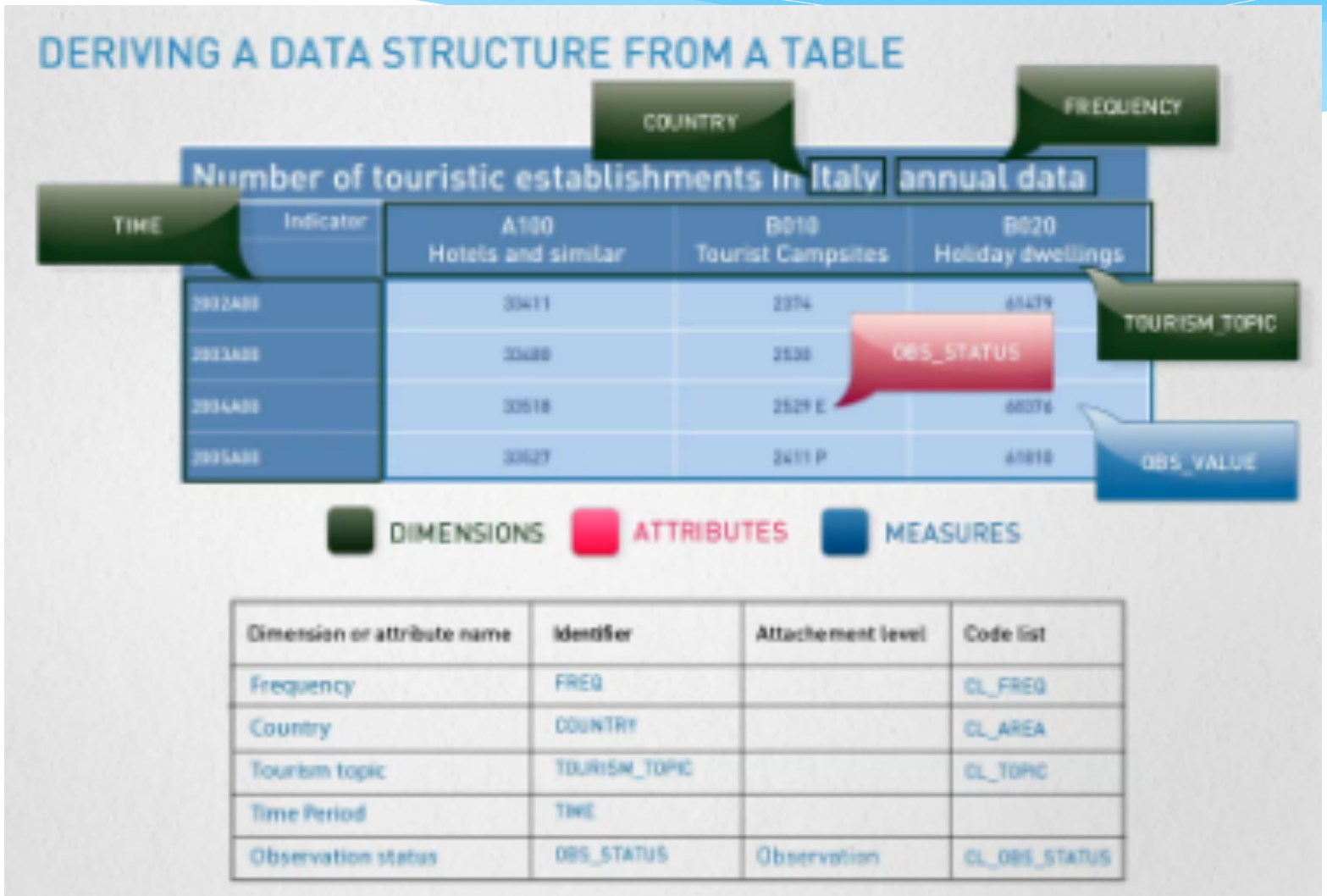
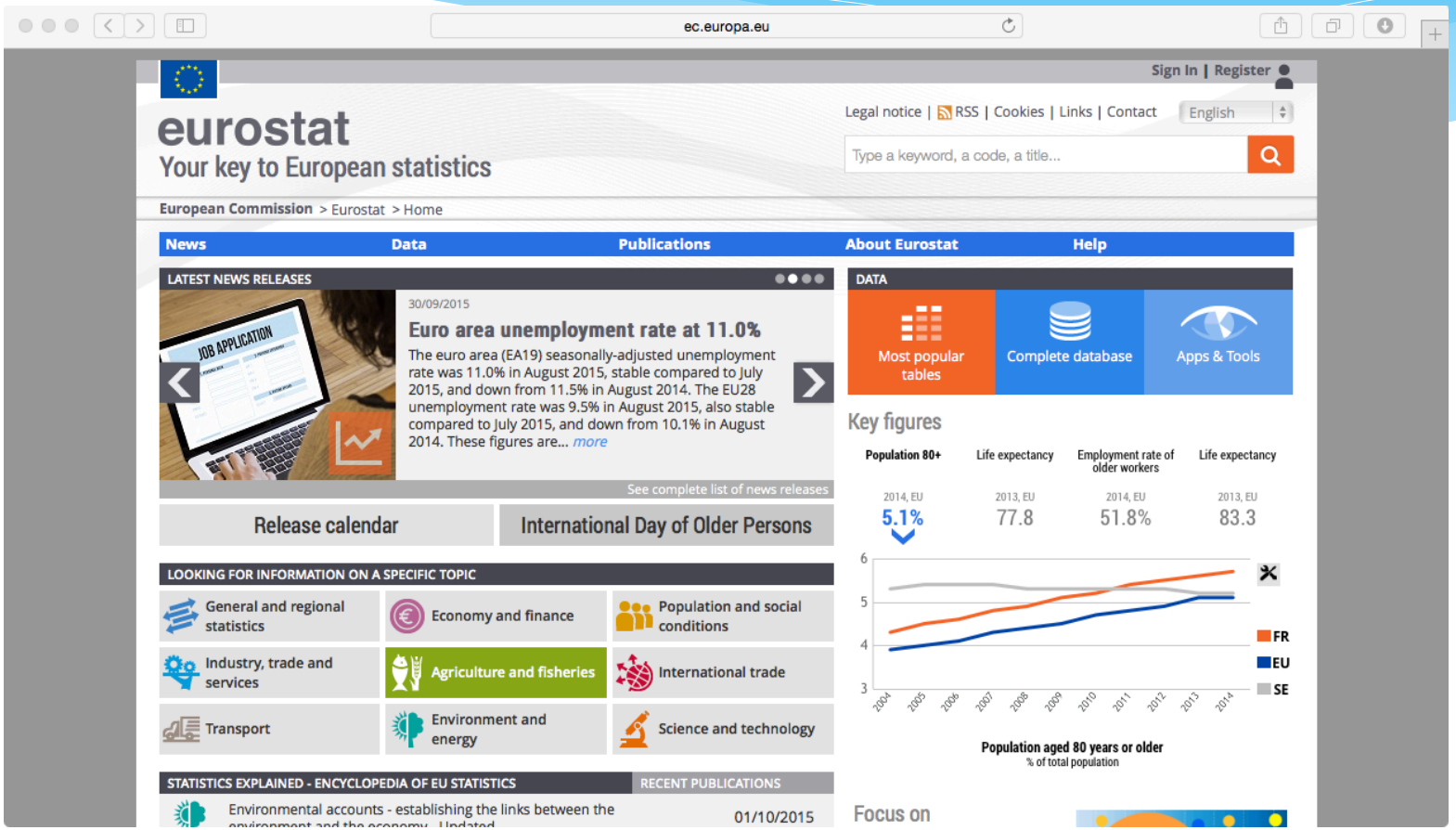


Data Structure Definition



Dimension or attribute name	Identifier	Attachement level	Code list
Frequency	FREQ		CL_FREQ
Country	COUNTRY		CL_AREA
Tourism topic	TOURISM_TOPIC		CL_TOPIC
Time Period	TIME		
Observation status	OBS_STATUS	Observation	CL_OBS_STATUS

Example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Euro area unemployment rate at 11.0%
The euro area (EA19) seasonally-adjusted unemployment rate was 11.0% in August 2015, stable compared to July 2015, and down from 11.5% in August 2014. The EU28 unemployment rate was 9.5% in August 2015, also stable compared to July 2015, and down from 10.1% in August 2014. These figures are... more
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Release calendar
International Day of Older Persons
LOOKING FOR INFORMATION ON A SPECIFIC TOPIC
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STATISTICS EXPLAINED - ENCYCLOPEDIA OF EU STATISTICS
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Environmental accounts - establishing the links between the
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Apps & Tools
Key figures
Population 80+
Life expectancy
Employment rate of older workers
Life expectancy
2014, EU
5.1%
2013, EU
77.8
2014, EU
51.8%
2013, EU
83.3
FR
EU
SE
Population aged 80 years or older
% of total population
Focus on

Example:

http://ec.europa.eu/eurostat/cache/metadata/en/tour_occ_esms.htm

ec.europa.eu

eurostat

Capacity and occupancy of tourist accomodation establishments

Reference Metadata in Euro SDMX Metadata Structure (ESMS)

Compiling agency: Eurostat, the statistical office of the European Union

Eurostat metadata

Reference metadata

National metadata

National reference metadata

National metadata produced by countries and released by Eurostat

Belgium	Bulgaria	Czech Republic	Denmark
Germany	Estonia	Ireland	Spain
France	Croatia	Italy	Latvia
Lithuania	Luxembourg	Hungary	Malta
Netherlands	Austria	Poland	Romania
Slovenia	Slovakia	Finland	Liechtenstein
Switzerland	Serbia		

For any question on data and metadata, please contact: EUROPEAN STATISTICAL DATA SUPPORT

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SDMX Data exchange

* The SDMX data exchange includes data exchange formats to establish interoperability. For this purpose, SDMX identifies three basic process patterns – bilateral, gateway and data sharing – and two models – push and pull – for sharing statistical data and metadata.
* A data sharing architecture often contains a SDMX registry, which is local structured repertory of data sets and metadata available from the available data sources

SDMX Exchange

* Global Registry: each local registry is connected with a Global Registry, which is a central repository or central point Yellow pages for the access of organizations using SDMX, developed in the cloud to be easily accessible by the SDMX community.

SDMX exchange – data sharing

The business vision for *SDMX* envisages a "data sharing" model to facilitate data and metadata exchange.

The SDMX Registry is tasked with providing structure, organisation, and maintenance and query interfaces for most of the SDMX components required to support the data sharing vision.

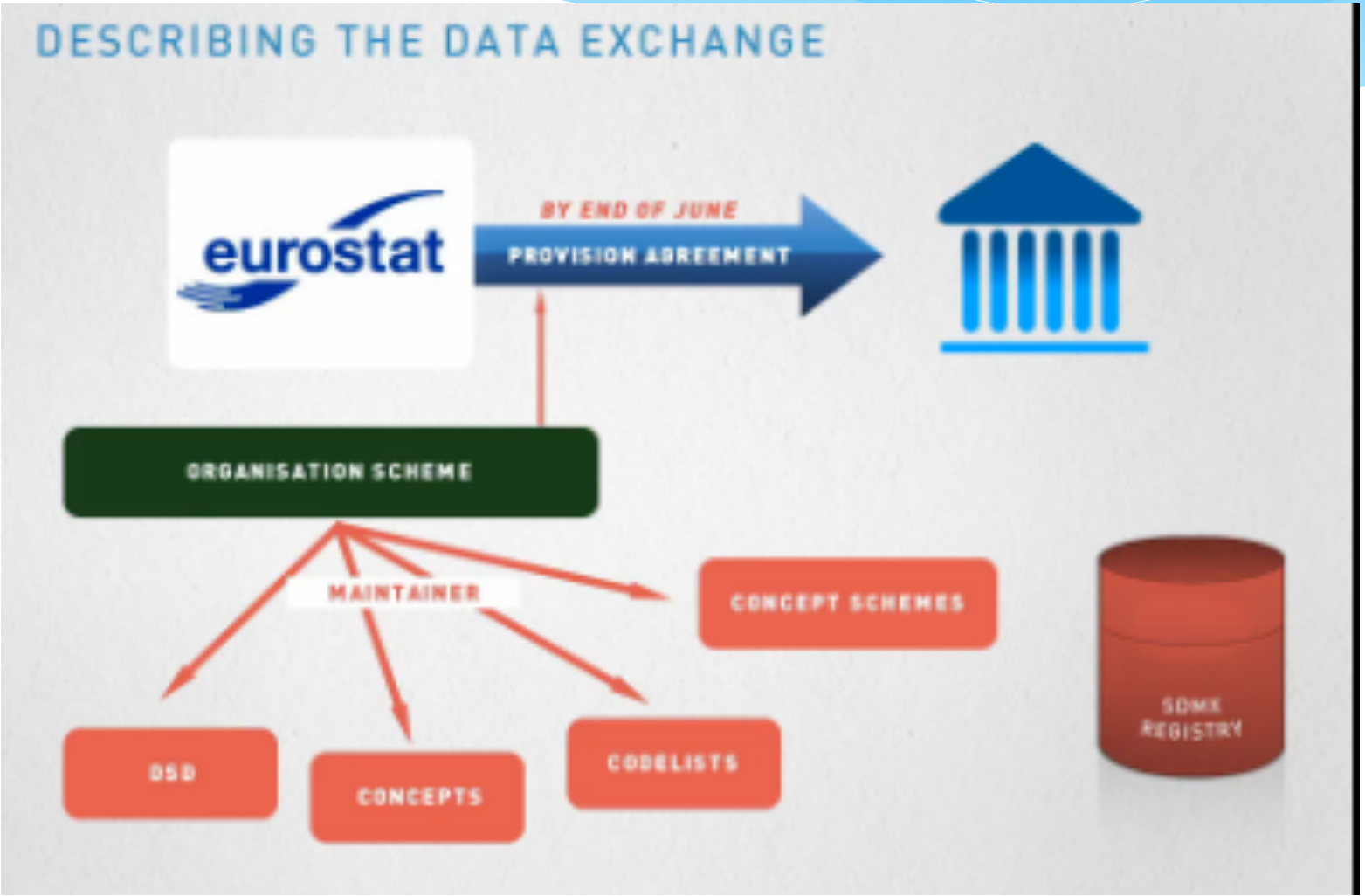
The "data sharing" model is based on the possibility of discovering easily where data and metadata are available and how to access them.

SDMX exchange – data sharing

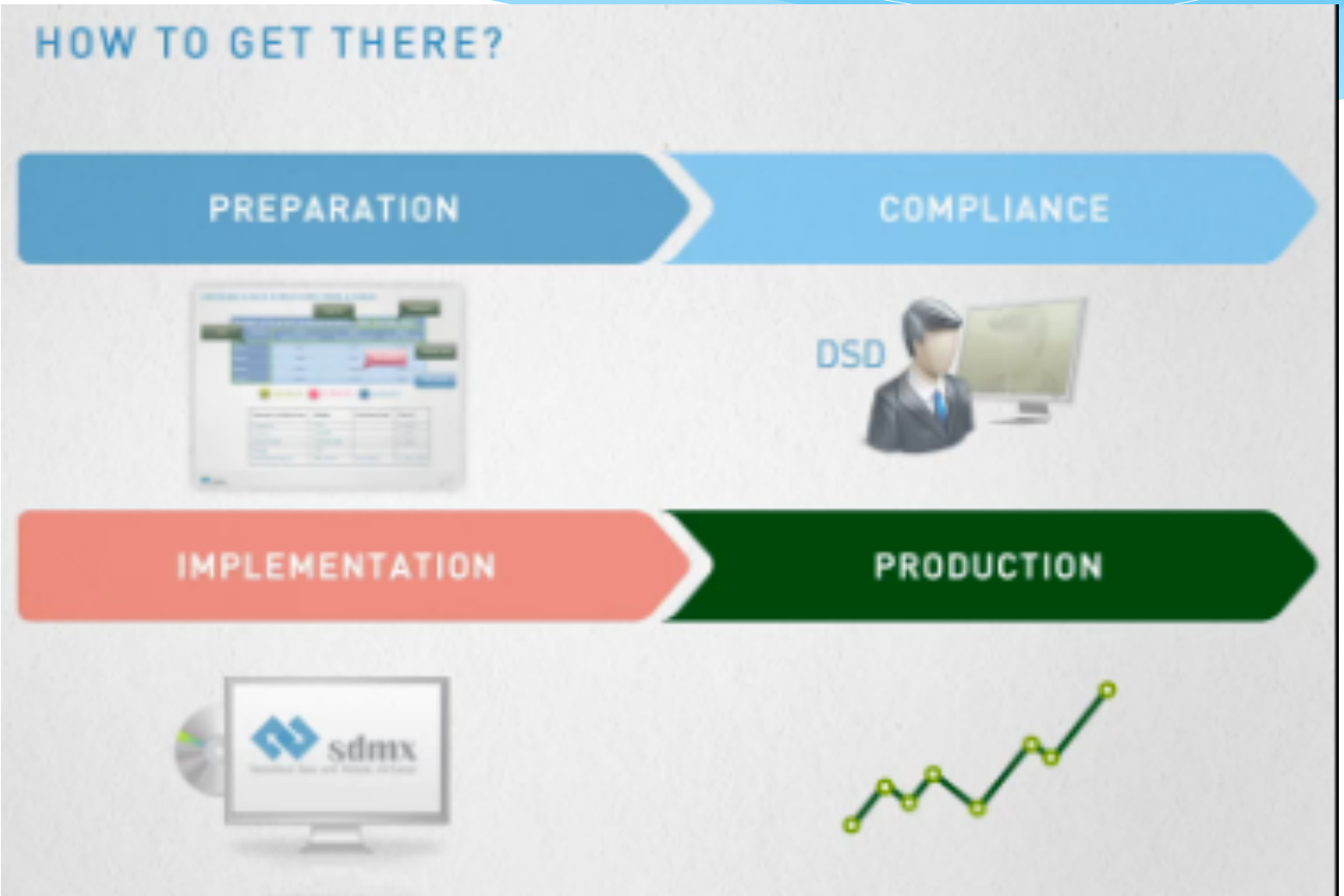
The SDMX Registry plays an important role in this architecture, in fact it can be seen as a central application which is accessible to other programs over the Internet (or an Intranet or Extranet) to provide information needed to facilitate the reporting, collection and dissemination of statistics.

In its broad terms, the SDMX Registry – as understood in web services terminology – is an application which stores metadata for querying, and which can be used by any other application in the network with sufficient access privileges.

SDMX Data exchange



SDMX Data exchange



SDMX Data exchange

DID WE ACHIEVE WHAT WE WANT?

- Described data and the exchange process
- Automated processes
- Commonly available tools and web services
- Corporate benefits through standardisation

A common

European Statistical System