NACE

The Statistical Classification of Economic Activities in the European Union

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Eurostat
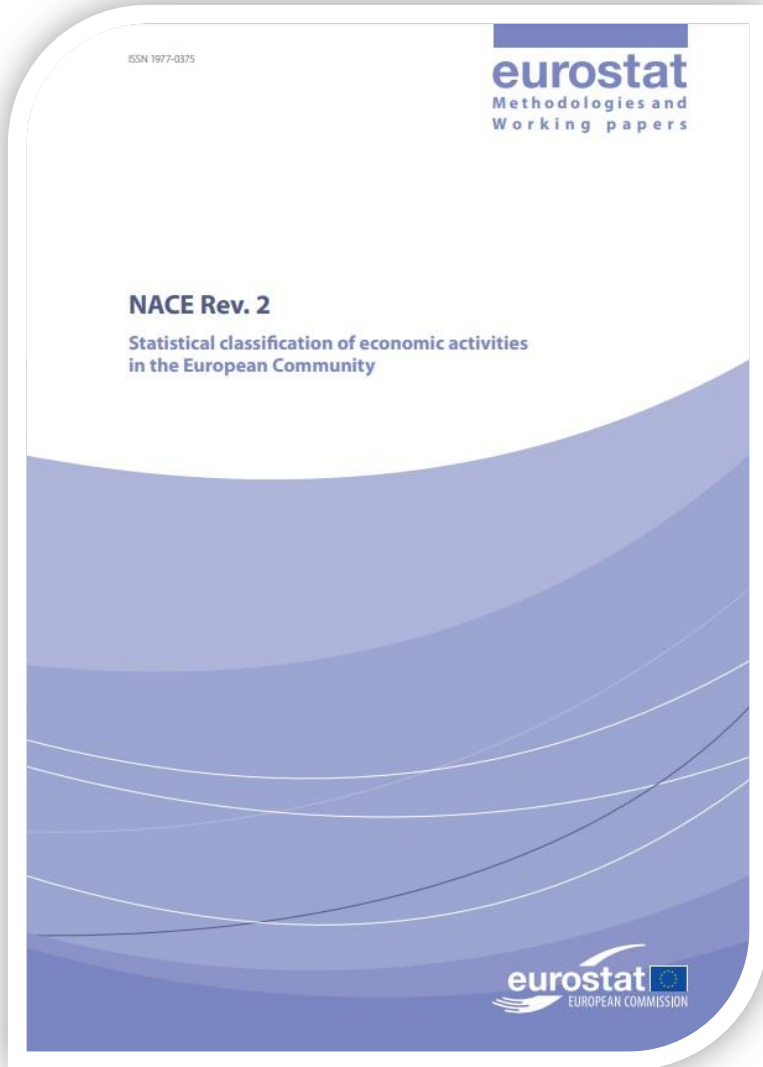**Unit B.1 "Data and Metadata Services; Standards"**

3rd JRC Summer School on Sustainable Finance, July 6-8 2021

Table of Contents

- NACE in its statistical ecosystem

- Tools to understand precisely the content of NACE categories

- Recommendations on how to build correspondence tables

Background information

What is NACE ?

- From French "**N**omenclature générale des **A**ctivités économiques dans les **C**ommunautés **e**uropéennes"

- Statistical Classification of Economic Activities in the European Community; current version in force: Revision 2 (2008)

- European standard classification of productive economic activities, based on global standard ISIC (International Statistical Industry Classification, United Nations)

- It presents the universe of economic activities partitioned in such a way that a NACE code can be associated with a statistical unit carrying them out

- It provides the framework for collecting and presenting a large range of statistical data according to economic activity

Facts are stubborn things, but statistics are pliable

What is Eurostat ?

- Eurostat is the statistical office and statistical authority of the European Union

- Its mission is to provide high quality statistics and data on Europe

- Its main task is to co-ordinate statistical activities

  - at Union level : Eurostat ensures the production of European statistics together with the Member States according to established rules and statistical principles, notably those laid down in the European statistics Code of Practice

  - at Commission level : Eurostat co-ordinates statistical activities across the Commission

What is a statistical classification ?

Definition

Ordered set of related, distinct, exhaustive and mutually exclusive categories, with one or more levels of detail, used to structure information in a given domain according to its similarities

Purpose

Categorise and organise a given universe ("simplify the real world") and enhance one's understanding of it ("make the complex understandable") in order to support evidence-informed decision-making

Specificities of statistical classifications (1)

(a) **mutually exclusive categories** : Each phenomenon or object is classified in one and only one category of the classification. For instance a classification with two categories "Antibiotics" and "Medicaments in pills" would not respect this principle since antibiotics can be presented in the form of pills

(b) **exhaustive coverage of the observed universe** : For each object, it must be possible to find a corresponding category in the classification (for instance, a classification of construction works broken down into "Non residential buildings" and "Residential buildings" would not be exhaustive since it would not cover civil engineering works like roads, bridges etc).

(c) **Precise description of the categories** : Each category of the classification is described in detail. Detailed information as to the content of each category must be provided to the users of the classification so that problematic objects and phenomena can be allocated without ambiguity to one and only one category of the classification.

(d) **Conceptual soundness** : The allocation to the various categories of the classification is ruled by consistent methodological principles.

(e) **Statistical balance** : Survey responses should not fall heavily into one category and sparsely into the other categories.

(f) **Operational feasibility** : There is no point in having a classification that cannot be implemented in practice.

Like dreams, statistics are a form of wish fulfilment

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Specificities of statistical classifications (2)

(g) **Strict, homogeneous and detailed hierarchical organization** : By doing so, it is possible to collect and present the information at various levels of aggregation (based on data availability); in short, each hierarchical level should constitute a classification of its own.

Different uses and types of statistics are best served by presenting statistics in terms of different levels of aggregation. Thus it may be necessary or desirable to use a classification at different levels of detail for different purposes; for example, it may not be necessary for the purposes of national accounting to classify data at the level of detail required for industrial statistics purposes. Similarly, data on production obtained from establishment inquiries can usually be classified in far more detail than data on capital formation obtained from administrative reporting systems. Classifications like NACE or CPA furnish a framework for comparable classifications of data at differing levels of detail, because of its hierarchical structure.

(h) **Numerical coding** : Each category is designated by a code number. This code provides an abridged designation of the categories, thus facilitating the treatment of the information.

(i) **Statistical robustness** : The classification should be able to be used for a number of years without revision.

(j) **International comparability** : The classification should be comparable, and preferably directly linked to, with any equivalent international classification.

One of the first things taught in introductory statistics is that correlation is not causation. It is also one of the first things forgotten

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NACE in its statistical ecosystem

There is more to it than meets the eye

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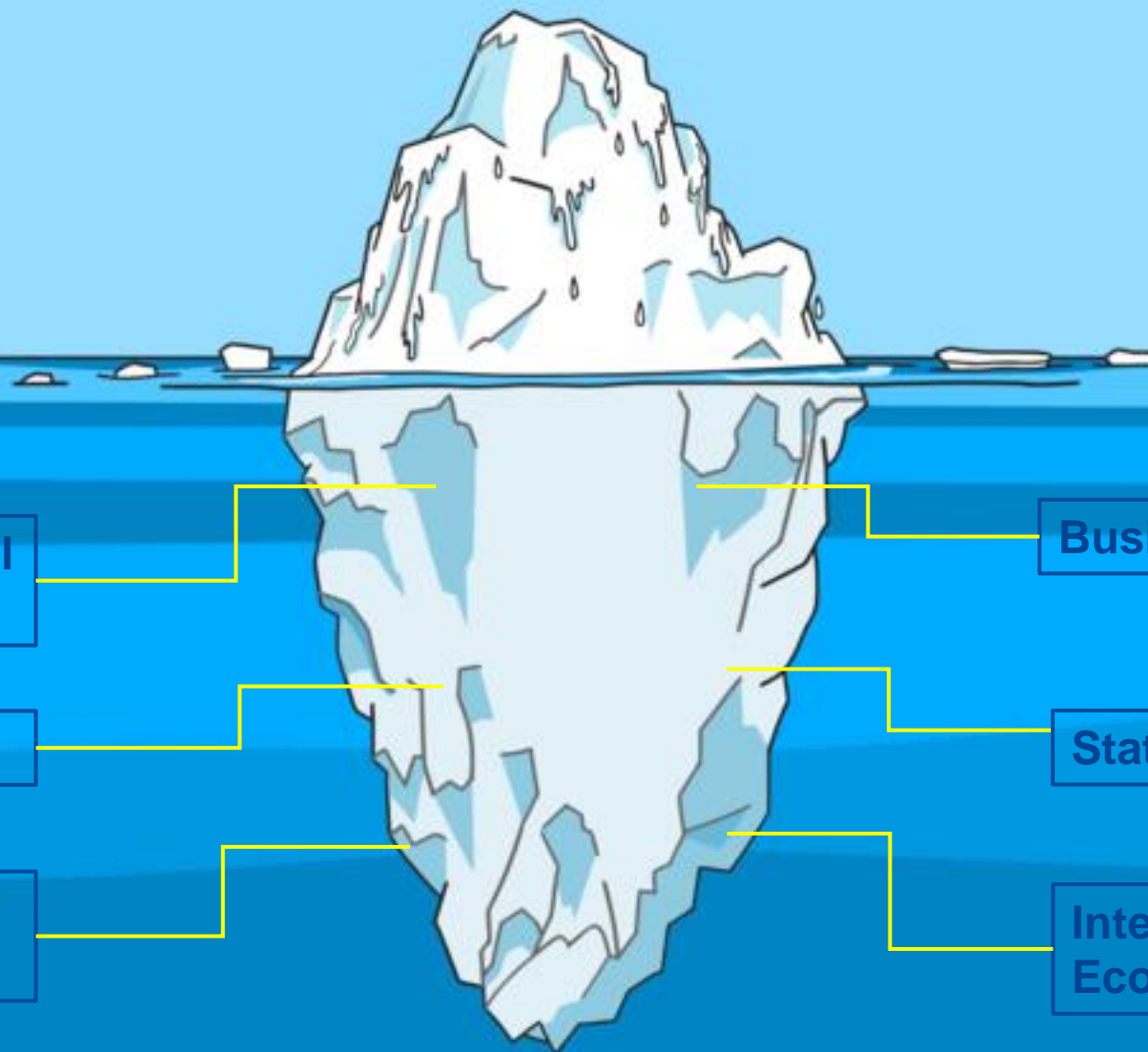Legal and institutional framework

Metadata

Strong governance and methodology

Business Registers

Statistical Units

Integrated System of Economic Classifications

Legal and institutional framework

Regulation (EC) no 1893/2006 of the European Parliament and of the Council of 20 December 2006 establishing the statistical classification of economic activities NACE Revision 2 and amending Council Regulation (EEC) No 3037/90 as well as certain EC Regulations on specific statistical domains

Binding in all EU Member States

Statistics compiled by statistical authorities (government or other public bodies such as international organisations) compiled on the basis of **authoritative frameworks** ensuring strong professional standards, such as professional independence, commitment to quality, confidentiality, use of international standards
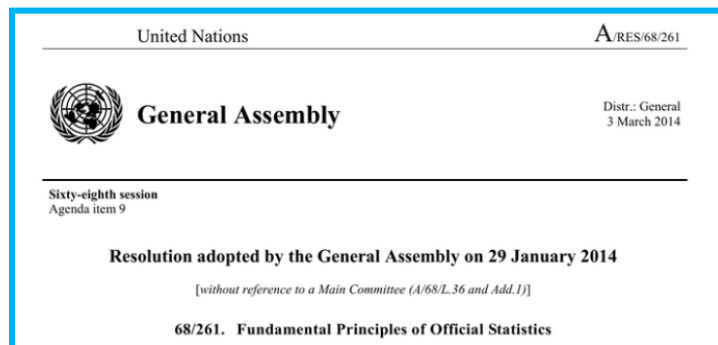
UN Fundamental Principles for Official Statistics
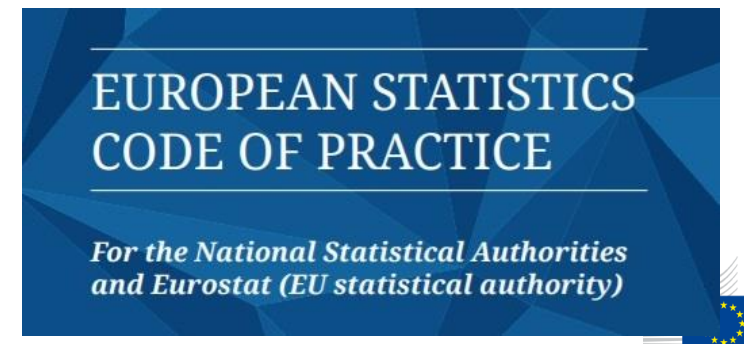
European Statistics Code of Practice

Metadata

- Classifications

- Correspondence tables between classifications

- Concepts and definitions

- Legal acts relating to statistics

- Methodological manuals relating to statistics

- Standard code lists

- **Reporting standards** ⟶

- And many more (e.g. Validation rules, Data Structure Definitions, Process descriptions)

Harmonised index of consumer prices (HICP) (prc_hicp)
Reference Metadata in Euro SDMX Metadata Structure (ESMS)
Compiling agency: Eurostat, the statistical office of the European Union

Eurostat metadata
Reference metadata
1. Contact
2. Metadata update
3. Statistical presentation
4. Unit of measure
5. Reference Period
6. Institutional Mandate
7. Confidentiality
8. Release policy
9. Frequency of dissemination
10. Accessibility and clarity
11. Quality management
12. Relevance
13. Accuracy
14. Timeliness and punctuality
15. Coherence and comparability
16. Cost and Burden
17. Data revision
18. Statistical processing
19. Comment
Related Metadata
Annexes (including footnotes)

National metadata
National reference metadata
National metadata produced by countries and released by Eurostat

Belgium	Bulgaria	Czechia
Denmark	Germany	Estonia
Ireland	Greece	Spain
France	Croatia	Italy
Cyprus	Latvia	Lithuania
Luxembourg	Hungary	Malta
Netherlands	Austria	Poland
Portugal	Romania	Slovenia
Slovakia	Finland	Sweden
Norway	Switzerland	North Macedonia
Turkey		

Standardised, user-oriented files describing the statistical data sets published by Eurostat on its website as well as national metadata files

Statistical units
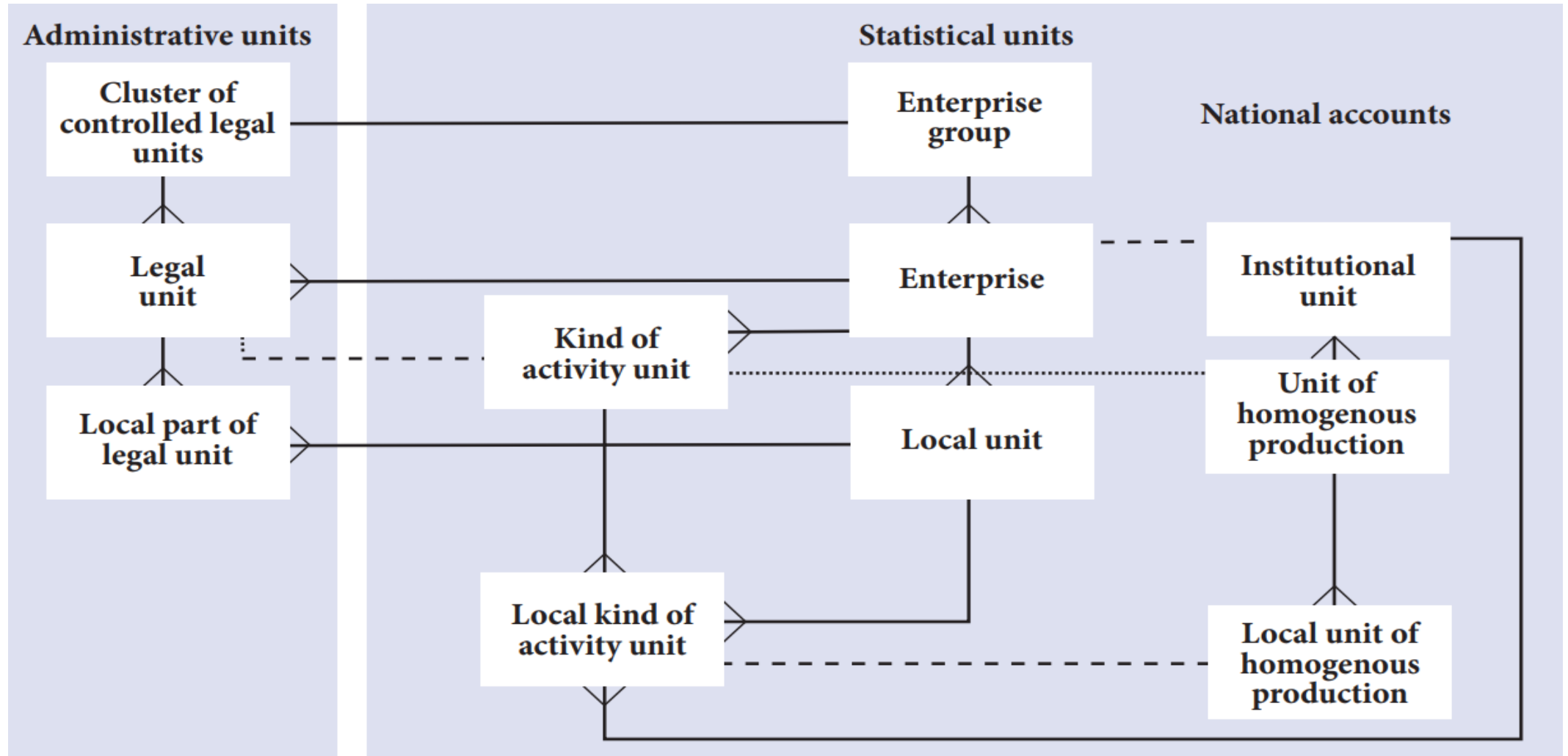
Statistical units

A statistical unit is an entity about which information is sought and for which statistics are ultimately compiled. The choice of the appropriate statistical unit(s) is of utmost importance for the quality of the statistics produced

- **Observation units** : identifiable legal/organisational or physical entities which are able, actually or potentially, to report data about their activities

- **Analytical units** : entities created by statisticians, often by splitting or combining observation units in order to compile more detailed and more homogeneous statistics
  - Not able to report data themselves about their activities
  - Indirect methods of statistical estimation exist including imputation of such data

- **Collection units** : the units from which data are obtained and by which statistical forms are completed

- **Reporting units** : the units about which data are reported

Everything that can be counted does not necessarily count; everything that counts cannot necessarily be counted.

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Statistical units

The relationship between the different types of statistical units can be summarised in the following way:

- Units with one or more activities and one or more locations
  - Enterprise
  - Institutional unit

- Units with one or more activities and a single location
  - Local unit

- Units with one single activity and one or more locations
  - KAU
  - UHP

- Units with one single activity and one single location
  - Local KAU
  - Local UHP

- Examples : Dwelling, household, enterprise, agricultural holding, geographic area

Statistical Business Registers

Repositories of legal and statistical units to be used for producing business and macroeconomic statistics

"Backbone" of the production of economic statistics because they provide the core infrastructure to ensure data consistency between various statistical outputs

They include information on the active population of:

- Enterprises carrying out economic activities which contribute to the gross domestic product (GDP);
- Legal units of which those enterprises consist of;
- Local units;
- Kind of activity units;
- Enterprise groups, incl. all-resident and multinational enterprise groups.

- NACE is one of the variables of statistical units recorded in business registers

Most people use statistics like a drunk man uses a lamppost; more for support than illumination

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Integrated System of Statistical Activity and Product Classifications
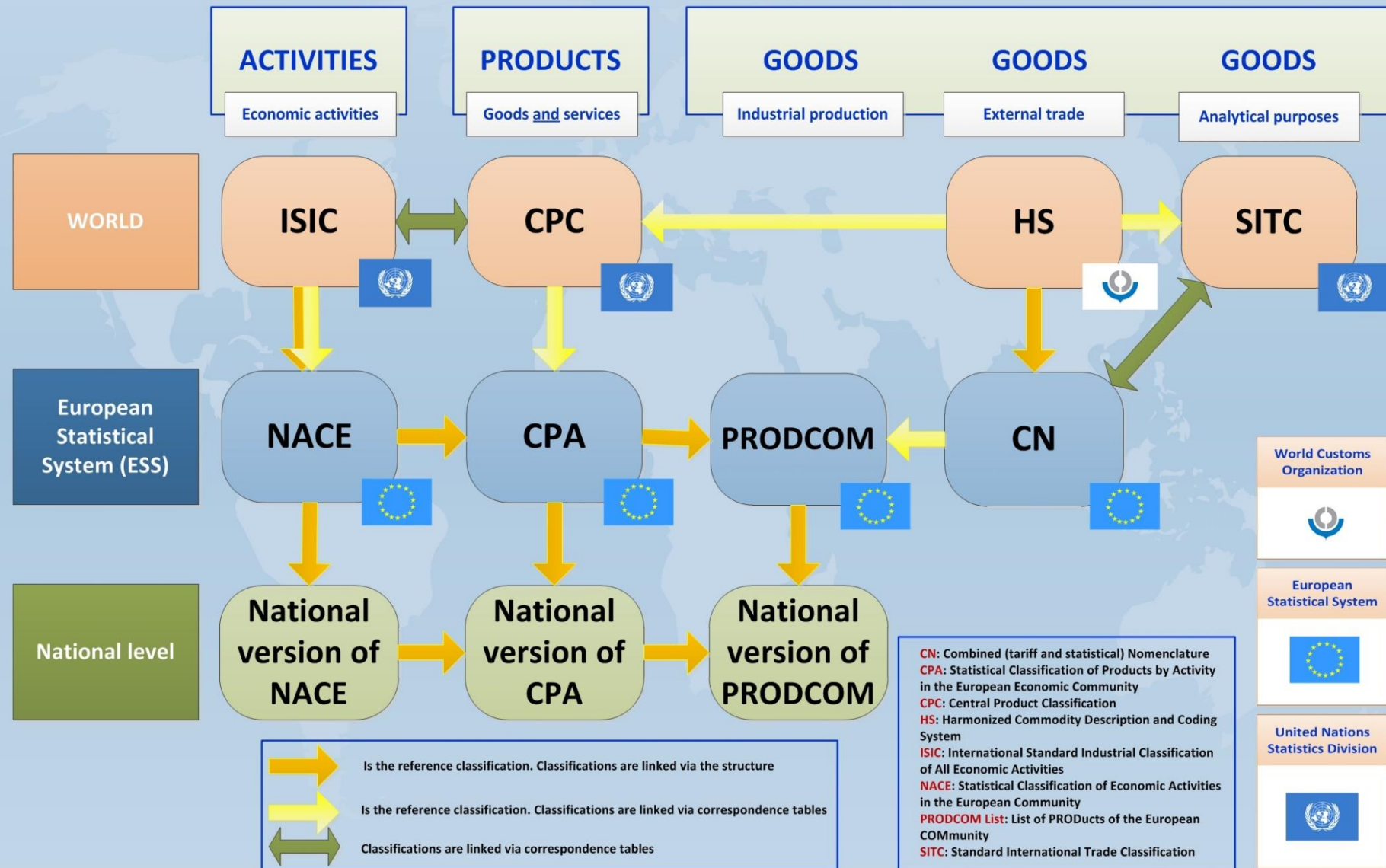
Governance

NACE is the most used classification in official statistics (together with NUTS, the Nomenclature of Territorial Units for Statistics which is used for regional statistics); as a consequence strong governance and methodology are essential for its sound implementation across countries.

- General governance by the ESS (European Statistical System) Committee on Standards
- Coordination with the UN classification through the UN Expert Group on Statistical Classifications where the EU is represented
- A forum open to national and Eurostat experts in NACE can be used to put questions (e.g. about the classification of a specific activity in NACE)
- Questions are dealt with by this forum, and answers are transformed into caselaw decisions which are made publicly available and integrated in official explanatory notes at next revisions

Revisions

- Professional associations all over Europe as well as all EU bodies are consulted and invited to make proposals
- Proposals are first discussed by ad hoc Task Force and their conclusions are validated by the ESS Committee on Standards
- Proposals are then submitted to Member States in a iterative way

Methodology

The classification (including the structure and explanatory notes) is also accompanied by a series of recommendations about the treatment of specific aspects such as :

- determination of the principal activity of units
- multiple and integrated activities
- horizontally and vertically integrated activities
- classification of holding companies and head offices
- backcasting
- outsourcing
- on-site installation
- repair and maintenance
- etc.

Those who ignore statistics are condemned to reinvent it

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Determination of the principal activity of a unit

Example: a unit carries out the following activities (shares in terms of value added):

| Section	Division	Group	Class	Description of the class	Share
C	25	25.9	25.91	Manufacture of steel drums and similar containers	10%
	28	28.1	28.11	Manufacture of engines and turbines, except aircraft, vehicle and cycle engines	6%
		28.2	28.24	Manufacture of power-driven hand tools	5%
		28.9	28.93	Manufacture of machinery for food, beverages and tobacco processing	23%
			28.95	Manufacture of machinery for paper and paperboard production	8%
G	46	46.1	46.14	Agents involved in the sale of machinery, industrial equipment, ships and aircraft	7%
		46.6	46.61	Wholesale of agricultural machinery, equipment and supplies	28%
M	71	71.1	71.12	Engineering activities and related technical consultancy	13%

Decision path (detailed explanations on next slide)

The top-down method is the method used for classifying a unit performing activities included in more than one NACE class. It is based on value added or any other suitable proxy
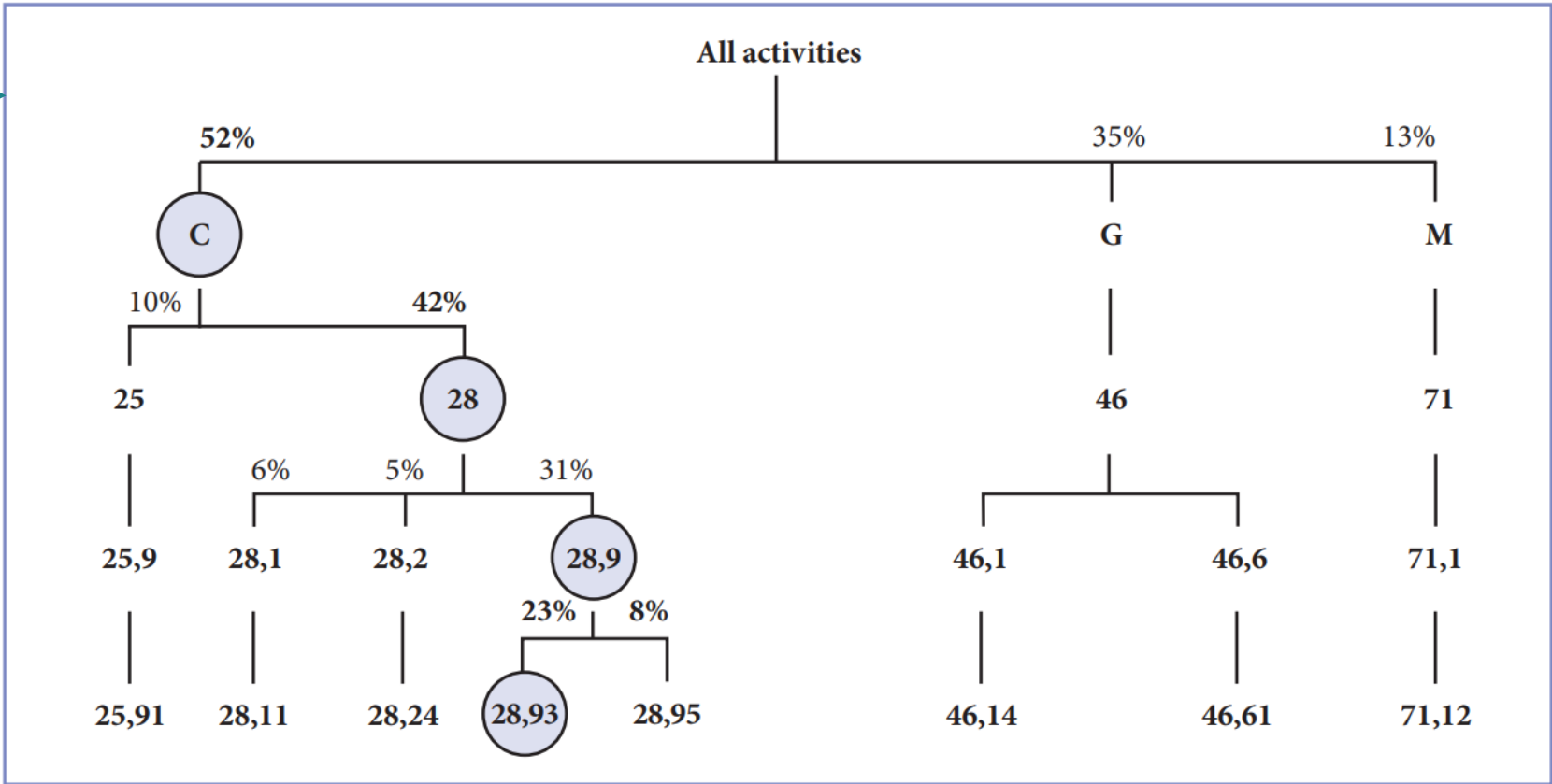
Description of decision path for determining the principal of a statistical unit

- Identify the main Section among

Section C - Manufacturing	52%
Section G - Wholesale and retail trade; repair of motor vehicles and motorcycles	35%
Section M - Professional, scientific and technical activities	13%

- Identify the main Division within main Section C:

Division 25	Manufacture of fabricated metal products, except machinery and equipment	10%
Division 28	Manufacture of machinery and equipment n.e.c.	42%

- Identify the main Group within the main Division 28:

Group 28.1	Manufacture of general-purpose machinery	6%
Group 28.2	Manufacture of other general-purpose machinery	5%
Group 28.9	Manufacture of other special-purpose machinery	31%

- Identify the main Class within the main Group 28.9:

Class 28.93	Manufacture of machinery for food, beverages and tobacco processing	23%
Class 28.95	Manufacture of machinery for paper and paperboard production	8%
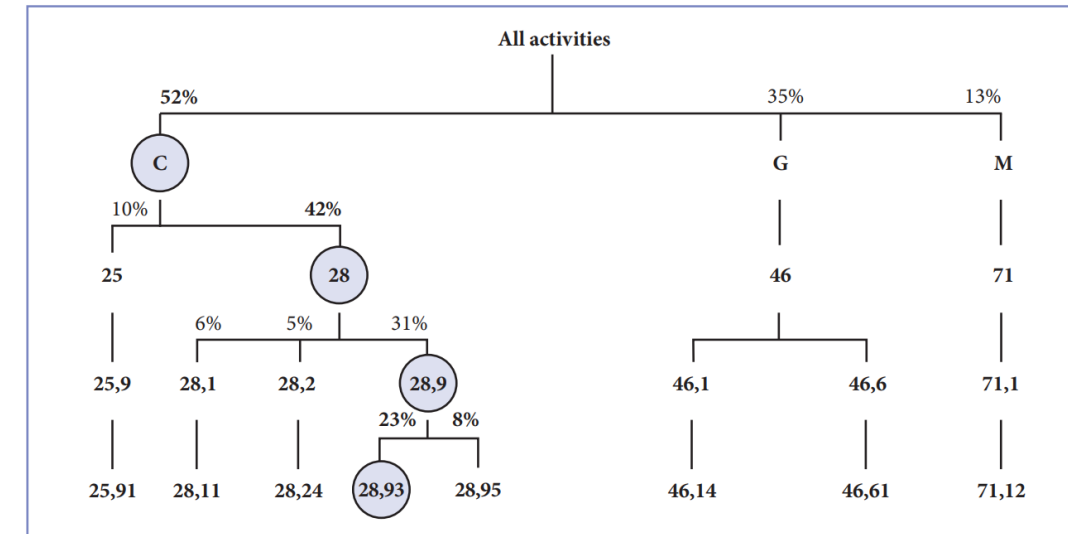
Therefore the correct class is 28.93 Manufacture of machinery for food, beverages and tobacco processing, although the class with the biggest share of value added is class: 46.61 Wholesale of agricultural machinery, equipment and supplies.

> If your experiment needs a statistician, you need a better experiment

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Tools to precisely understand the content of NACE categories

Tools to precisely understand the content of NACE categories

- Explanatory notes (what is included, what is excluded, borderline cases)

- Rulings and classification opinions

- Alphabetical indexes (progressively replaced by new technologies such as Linked Open Data and artificial intelligence)

- Network of national and international classification experts

- Discussion forums

- Various search tools

- Correspondence tables between classifications

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Granularity of statistical classifications
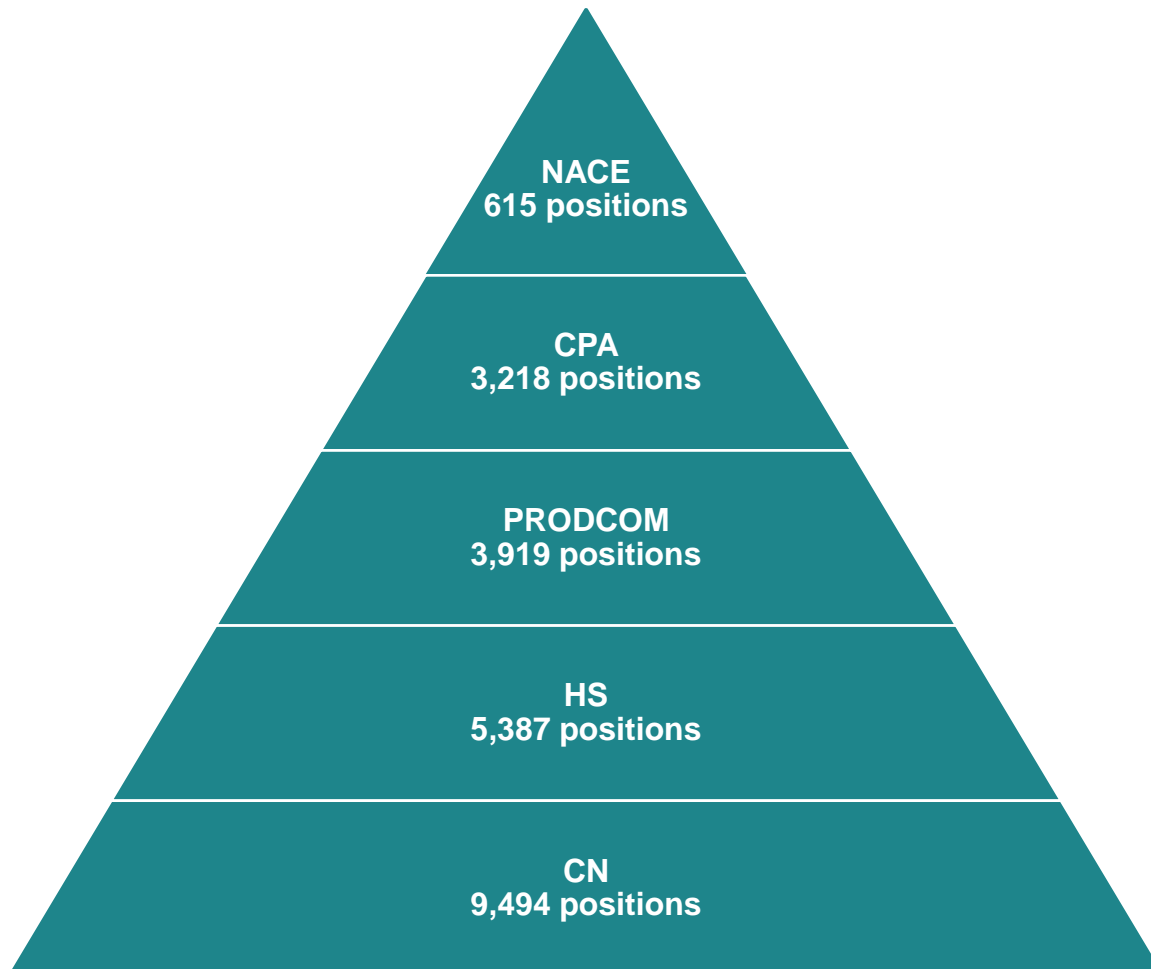
Supporting information

Explanatory notes (+ linguistic availability):

NACE : 220 pages; BG, CS, DE, EN, ES, FR, HR, HU, LT, LV, PL, RU, TR
CPA : 350 pages; DE, EN, ES, FR
PRODCOM : No explanatory notes (PRODCOM categories defined by both CPA and CN)
HS : 2,000 pages, available in almost all world languages (but not for free…)
CN : 422 pages, adding up to the HS explanatory notes

Since there are national versions of these classifications, more linguistic versions might be available

NACE
615 positions

CPA
3,218 positions

PRODCOM
3,919 positions

HS
5,387 positions

CN
9,494 positions

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Integrated System of Statistical Activity and Product Classifications

ACTIVITIES — Economic activities
PRODUCTS — Goods and services
GOODS — Industrial production
GOODS — External trade
GOODS — Analytical purposes

WORLD: ISIC — CPC — HS — SITC

European Statistical System (ESS): NACE — CPA — PRODCOM — CN

National level: National version of NACE — National version of CPA — National version of PRODCOM

CN: Combined (tariff and statistical) Nomenclature
CPA: Statistical Classification of Products by Activity in the European Economic Community
CPC: Central Product Classification
HS: Harmonized Commodity Description and Coding System
ISIC: International Standard Industrial Classification of All Economic Activities
NACE: Statistical Classification of Economic Activities in the European Community
PRODCOM List: List of PRODucts of the European COMmunity
SITC: Standard International Trade Classification

Is the reference classification. Classifications are linked via the structure
Is the reference classification. Classifications are linked via correspondence tables
Classifications are linked via correspondence tables

World Customs Organization
European Statistical System
United Nations Statistics Division

+

- NACE — 615 positions
- CPA — 3,218 positions
- PRODCOM — 3,919 positions
- HS — 5,387 positions
- CN — 9,494 positions

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eurostat

NACE: 20.17	Manufacture of synthetic rubber in primary forms
CPA: 20.17.10	Synthetic rubber in primary forms

20.17.10.50	Synthetic latex rubber	kg	T

4002[.11 + .41 + .51 + .91]

4002 11 00	Styrene-butadiene rubber latex "SBR"; carboxylated styrene-butadiene rubber latex "XSBR"
4002 41 00	Chloroprene latex "chlorobutadiene rubber, CR"
4002 51 00	Latex of acrylonitrile-butadiene rubber "NBR"
4002 91 00	Synthetic rubber and factice derived from oils, in primary forms or in plates, sheets or strip (excl. styrene-butadiene rubber "SBR", carboxylated styrene-butadiene rubber "XSBR", butadiene rubber "BR", isobutylene isoprene rubber "IIR", halo-isobutene-isoprene rubber "CIIR" or "BIIR", chloroprene rubber "CR", acrylonitrile-butadiene rubber "NBR", isoprene rubber "IR" and non-conjugated ethylene-propylene diene rubber "EPDM")

20.17.10.90	Synthetic rubber (excluding latex)	kg	T

4002[.19(.10 + .20 + .30 + .90) + .20 + .31 + .39 + .49 + .59 + .60 + .70 + .80 + .99(.10 + .90)]

| 4002 19 10	Styrene-butadiene rubber produced by emulsion polymerisation "E-SBR", in bales
4002 19 20	Styrene-butadiene-styrene block copolymers produced by solution polymerisation "SBS, thermoplastic elastomers", in granules, crumbs or powders
4002 19 30	Styrene-butadiene rubber produced by solution polymerisation "S-SBR", in bales
4002 19 90	Styrene-butadiene rubber "SBR" and carboxylated styrene-butadiene rubber "XSBR", in primary forms or in plates, sheets or strip (excl. E-SBR and S-SBR in bales, SBS thermoplastic elastomers in granules, crumbs or powder and latex)
4002 20 00	Butadiene rubber "BR", in primary forms or in plates, sheets or strip
4002 31 00	Isobutylene isoprene rubber "IIR", in primary forms or in plates, sheets or strip
4002 39 00	Halo-isobutene-isoprene rubber "CIIR" or "BIIR", in primary forms or in plates, sheets or strip
4002 49 00	Chloroprene "chlorobutadiene rubber, CR", in primary forms or in plates, sheets or strip (excl. latex)
4002 59 00	Acrylonitrile-butadiene rubber "NBR", in primary forms or in plates, sheets or strip (excl. latex)
4002 60 00	Isoprene rubber "IR", in primary forms or in plates, sheets or strip
4002 70 00	Ethylene-propylene diene rubber "EPDM", non-conjugated, in primary forms or in plates, sheets or strip
4002 80 00	Mixtures of natural rubber, balata, gutta-percha, guayule, chicle or similar types of natural rubber with synthetic rubber or factice, in primary forms or in plates, sheets or strip
4002 99 10	Natural rubber products modified by the incorporation of plastics (excl. depolymerised natural rubber)
4002 99 90	Synthetic rubber and factice derived from oils, in primary forms or plates, sheets or strip (excl. latex; styrene-butadiene "SBR", carboxylated styrene-butadiene "XSBR", butadiene "BR" butyl "IIR", halo-isobutene-isoprene "CIIR" or "BIIR", chloroprene -chlorobutadiene- "CR", acrylonitrile-butadiene "NBR", isoprene "IR" or ethylene-propylene-non-conjugated diene "EPDM" rubber; products modified by the incorporation of plastics)

Recommendations for correspondence tables

Correspondence tables

A correspondence table (also known as "concordance table", "mapping", "correlation table") establishes links between the codes in a source classification with the corresponding codes in a target classification. The nature of the links can vary:

- one-to-one links, meaning that the whole content of a position in the source classification corresponds exactly to the whole content of a position in the target classification (even if the textual labels are different);
- one-to-many links, meaning that the content of a position in the source classification is distributed over more than one position in the target classification;
- many-to-one links, meaning that the content of several positions in the source classification is grouped into a single position in the target classification;
- many-to-many links, meaning that m number of positions in the source classification corresponds to n number of positions in the target classification.
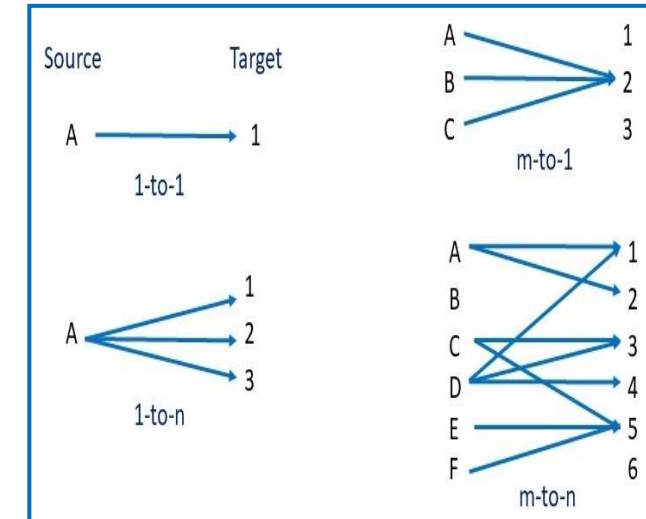
In statistics they are essential tools allowing comparability between datasets compiled on the basis of different classification systems. Thanks to the integrated systems of economic classifications implemented over the last 40 years and the close coordination between major players in Official Statistics, the quality of this comparability has been significantly increased.

Methodological principles for correspondence tables between statistical classifications

- Correspondence tables should be as much specific and straightforward as possible.

- In cases where elements of one classification cannot be linked to the elements of the other without making splits of single elements, the content of the partitioned elements should be described in detail (it is not enough to label them as "ex-case" or "part of").

- The elaboration of correspondence tables should always start at the lowest hierarchical level of the classifications whose linkage is to be elaborated.

- It should made clear from the beginning of the elaboration of a specific correspondence table which type of relation is conceptually given between the classifications in question.

- Correspondence tables drafted by an expert should be presented for reviewing to the relevant community, as he/she might have a specific understanding and interpretation of the classifications in questions.

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Methodological principles for correspondence tables between statistical classifications

- Correspondence tables should be elaborated by the drafters/designers of the specific classifications, and not by the users.

- Correspondence tables should be elaborated during the process of the design and elaboration of the specific classifications, and not after the design process is finished. Experience shows that the linkage exercise can contribute to the design process.

- The quality of correspondence tables depends heavily on the quality of the definitions and descriptions of the relevant classifications.

- Correspondence tables should be part of the publications of the classifications in question. This may be done in print form and/or by EDP-facilities (diskette, on-line).

- Correspondence tables should be available at the same time a new or revised classification is being published.

- Correspondence tables should be presented in a form that is technically correct but at the same time easy to understand for users.

A word about
the current revision of NACE Rev. 2

Current revision of NACE Rev. 2

- Implementation : Depending on domain concerned (but certainly not before 2023)

- Some proposed changes (draft list !)

  - Mobile and take-away food services; Thermal, sound or vibration insulation; Food supplements; Physiotherapist activities; Cash-for-gold shops; Distribution centres or logistic platforms; 3D printing; E-sports; Crypto-currencies; Drones

  - New explanatory notes

  - Numerous clarifications in explanatory notes

For more information

- **NACE Rev. 2** , Statistical Classification of Economic Activities

- **General Introduction** to International Statistical Classifications

- **European Business Statistics Manual** (statistical units, business registers, EuroGroups register)

- **Integrated System of Statistical Activity and Product Classifications** (poster)

- **RAMON** , Eurostat's server for international statistical classifications

- **Statistical Data and Metadata eXchange**

- **estat-classifications@ec.europa.eu**

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All the statistics in the world can't measure the warmth of a smile