

Copenhagen 22-26 September 2025

39th Voorburg Group Meeting

An early integrated approach using automated tools and expert validation to automatically recode from ATECO2002 to ATECO2025

A focus on section G “Wholesale and retail trade”

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Contents

1. European and Italian background: the new NACE Rev. 2.1 and the ATECO classifications
2. Overview of changes in section G “Wholesale and retail Trade” and impact on theoretical correspondence tables
3. Developing a national operational correspondence table: data and methods
4. Implementing the new classification in the Italian SBR
5. Conclusions and future developments

Background: Italian SBR

- In Italy there are about **4.7 million active enterprises**.
- The majority of them are **Small and Medium-sized Enterprises (SMEs)**.
- Enterprises with **less than nine employees** are more than 4.5 million.
- **Section G “Wholesale and retail trade”** represent 22%.
- In **Section G <9 employees** are more than 95%.
- **Economic activity** is the main classification criterion of business and economic statistics.
- The **NACE classification** is the statistical classification of economic activities in the European Community. **ATECO** is the **Italian classification** of economic activities.
- **Eighty-six statistical domains** use the NACE classification (Eurostat, 2019).

Background: the revision of NACE

- **Changes in economic structures and organisations**, as well as technological developments, give rise to new activities and products, which may supersede existing activities and products. Such changes imply a constant challenge for the compilation of statistical classifications.
- The interval between revisions must not be too long, given the dynamics of the classification themselves, but also not too short, since this compromises the **comparability of the data over time**, a key prerequisite for any revision of a classification. This is particularly crucial if the revision includes structural changes that lead to breaks in the time series.



Background: implementation of NACE Rev. 2.1 in Italy

Goal	Timeline
EU legal entry into force	1 January 2025
ATECO2025 effective in Italy	1 April 2025
Availability of the first dual coding of the SBR	By December 2025
Structural survey	In 2026 (reference year 2025)
Full adjustment of short-term surveys (Italy, estimate)	In 2028 (data transmission in NACE Rev. 2.1 and the 2025 base is scheduled for 2028)

5 An early integrated approach using automated tools and expert validation to automatically recode from ATECO2002 to ATECO2025.
A focus on section G “Wholesale and retail trade”¹ ALONZI, MANCINI

Background: the theoretical correspondence table

- In order to allow for the full implementation of the new classification within statistical and administrative processes, or other types of processes, **correspondence relationships** between the new classification and its previous version are also made available.
- The correspondence relationships are **presented in the form of a table** (correspondence, conversion or mapping table) where each NACE Rev. 2.1/ATECO 2025 code is associated with at least one code of the NACE Rev. 2/ATECO 2022 classification.
- Its objective is to support the recoding operations of units during the transition from the previous to the new classification, or vice versa (**bidirectional table**).
- It theoretically provides all possible correspondence relationships between classifications (**theoretical table**).

Background: types of theoretical correspondences

SIMPLE

- 1:1 correspondences
- N:1 correspondences



one code in NACE Rev2/Ateco2022 corresponds exactly to one code in NACE Rev2.1/Ateco2025 and vice versa



two or more codes in NACE Rev2/Ateco2022 correspond to one code in NACE Rev2.1/Ateco2025

COMPLEX (>70%)

- 1:M correspondences
- N:M correspondences



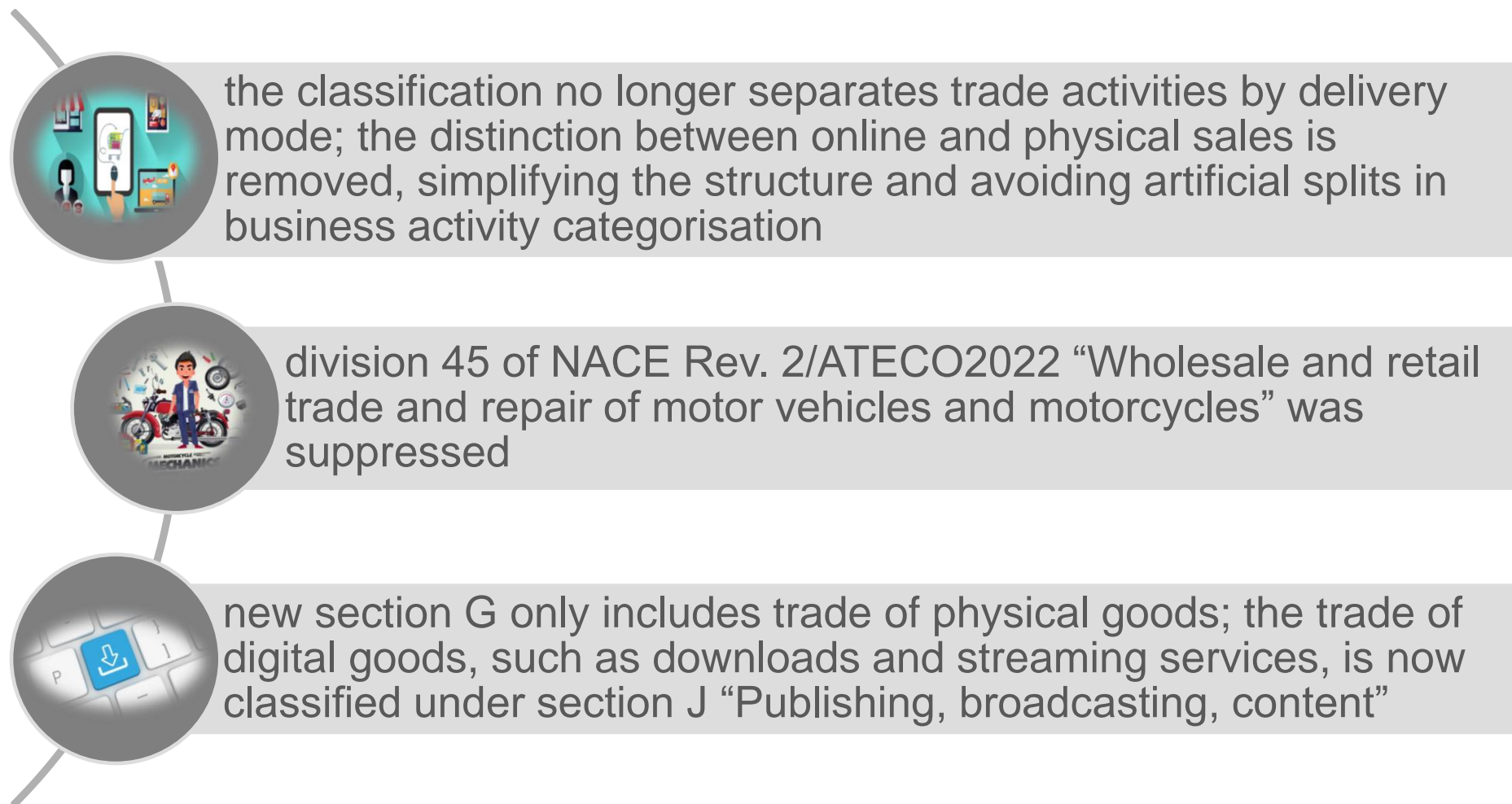
one NACE Rev2/Ateco2022 code is split into two or more codes in NACE Rev2.1/Ateco2025



two or more codes in NACE Rev2/Ateco2022 correspond to two or more codes in NACE Rev2.1/Ateco2025

Overview of changes in section G “Wholesale and retail Trade”

Structural changes in G



Overview of changes in section G “Wholesale and retail Trade”

NACE REV. 2 / ATECO2022

G WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES

- 45 Wholesale and retail trade and repair of motor vehicles and motorcycles
- 46 Wholesale trade, except of motor vehicles and motorcycles
- 47 Retail trade, except of motor vehicles and motorcycles

NACE REV. 2.1 / ATECO2025

G WHOLESALE AND RETAIL TRADE

- 46 Wholesale trade
- 47 Retail trade

Overview of changes in section G “Wholesale and retail Trade”

NACE Rev. 2 – NACE Rev. 2.1 Correspondence table at division level

NACE Rev. 2	Type of mapping	NACE Rev. 2.1
45 Wholesale and retail trade and repair of motor vehicles and motorcycles	NACE Rev. 2 division 45 is mapped to NACE Rev. 2.1 divisions 46, 47, 95 3 different correspondent NACE Rev. 2.1 codes	46 Wholesale trade 47 Retail trade 95 Repair and maintenance of computers, personal and household goods, and motor vehicles and motorcycles
46 Wholesale trade, except of motor vehicles and motorcycles	NACE Rev. 2 division 46 is mapped to NACE Rev. 2.1 division 46 1 different NACE Rev. 2.1 code	46 Wholesale trade
47 Retail trade, except of motor vehicles and motorcycles	NACE Rev. 2 division 47 is mapped to NACE Rev. 2.1 divisions 47, 35, 43, 52, 53, 55, 56, 58, 60, 61, 68, 73, 74, 77, 82, 85, 86, 87, 95, 96 21 different correspondent NACE Rev. 2.1 codes	47 Retail trade 35 Electricity, gas, steam and air conditioning supply 43 Specialised construction activities 52 Warehousing, storage and support activities for transportation 53 Postal and courier activities

CONFIRM code
EXIT code

Overview of changes in section G “Wholesale and retail Trade”

NACE Rev. 2.1– NACE Rev. 2 Correspondence Table at division level

NACE Rev. 2.1	Type of mapping	NACE Rev. 2
46 Wholesale trade	NACE Rev. 2.1 division 46 is mapped to NACE Rev. 2 divisions 45, 46, 82 3 different correspondent NACE Rev. 2 codes	45 Wholesale and retail trade and repair of motor vehicles and motorcycles 46 Wholesale trade, except of motor vehicles and motorcycles 82 Office administrative, office support and other business support activities
47 Retail trade	NACE Rev. 21 division 47 is mapped to NACE Rev. 2 divisions 46,47, 82 3 different correspondent NACE Rev. 2 codes	45 Wholesale and retail trade and repair of motor vehicles and motorcycles 47 Retail trade, except of motor vehicles and motorcycles 82 Office administrative, office support and other business support activities

CONFIRM code
ENTRY code

Overview of changes in section G “Wholesale and retail Trade”



complex
relationships

e.g. old code 47.81 “**Retail sale via stalls and markets of food, beverages and tobacco products**” is related to 8 possible new codes:

- 47.11 Non-specialised retail sale of predominately food, beverages or tobacco
- 47.21 Retail sale of fruit and vegetables
- 47.22 Retail sale of meat and meat products
- 47.23 Retail sale of fish, crustaceans and molluscs
- 47.24 Retail sale of bread, cake and confectionery
- 47.25 Retail sale of beverages
- 47.26 Retail sale of tobacco products
- 47.27 Retail sale of other food

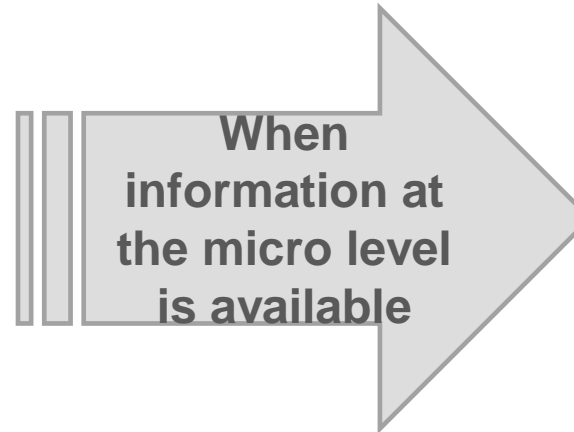
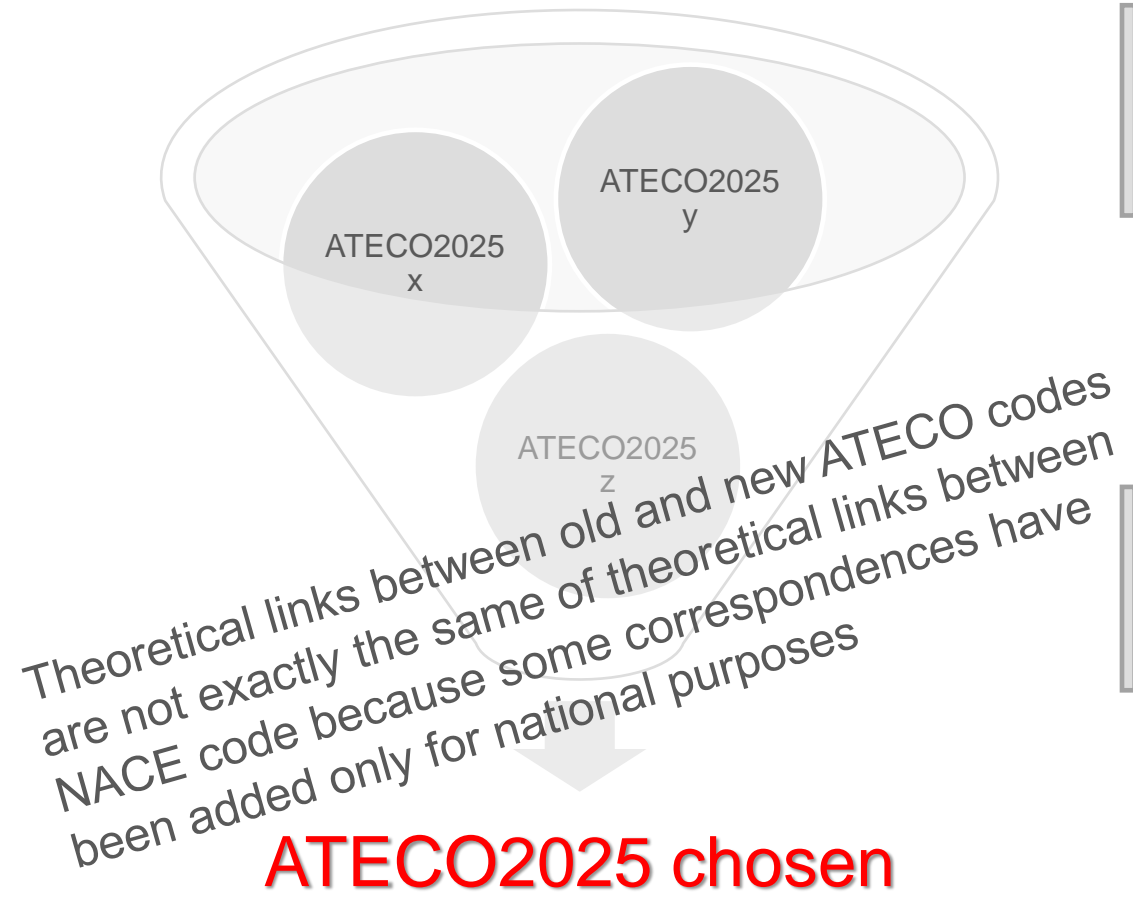


recoding
of units

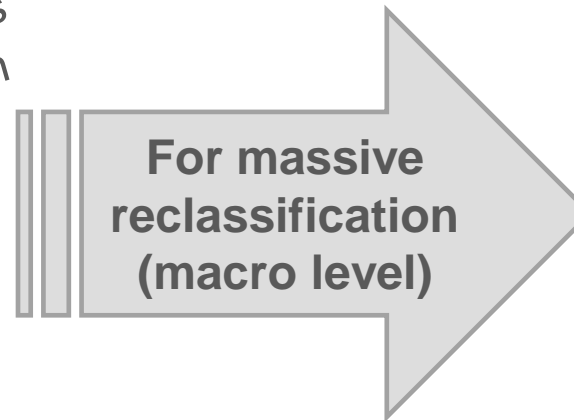
is possible only if
specific
information is
available

Developing a national operational correspondence table

When more ATECO 2025 codes are possible



Application of the theoretical correspondence table
(that includes common contents)



Application of an operational correspondence table:
provides only one Ateco2025 (the “predominant” or “most representative”) among n Ateco2025 associated to the starting Ateco2022

Developing a national operational correspondence table

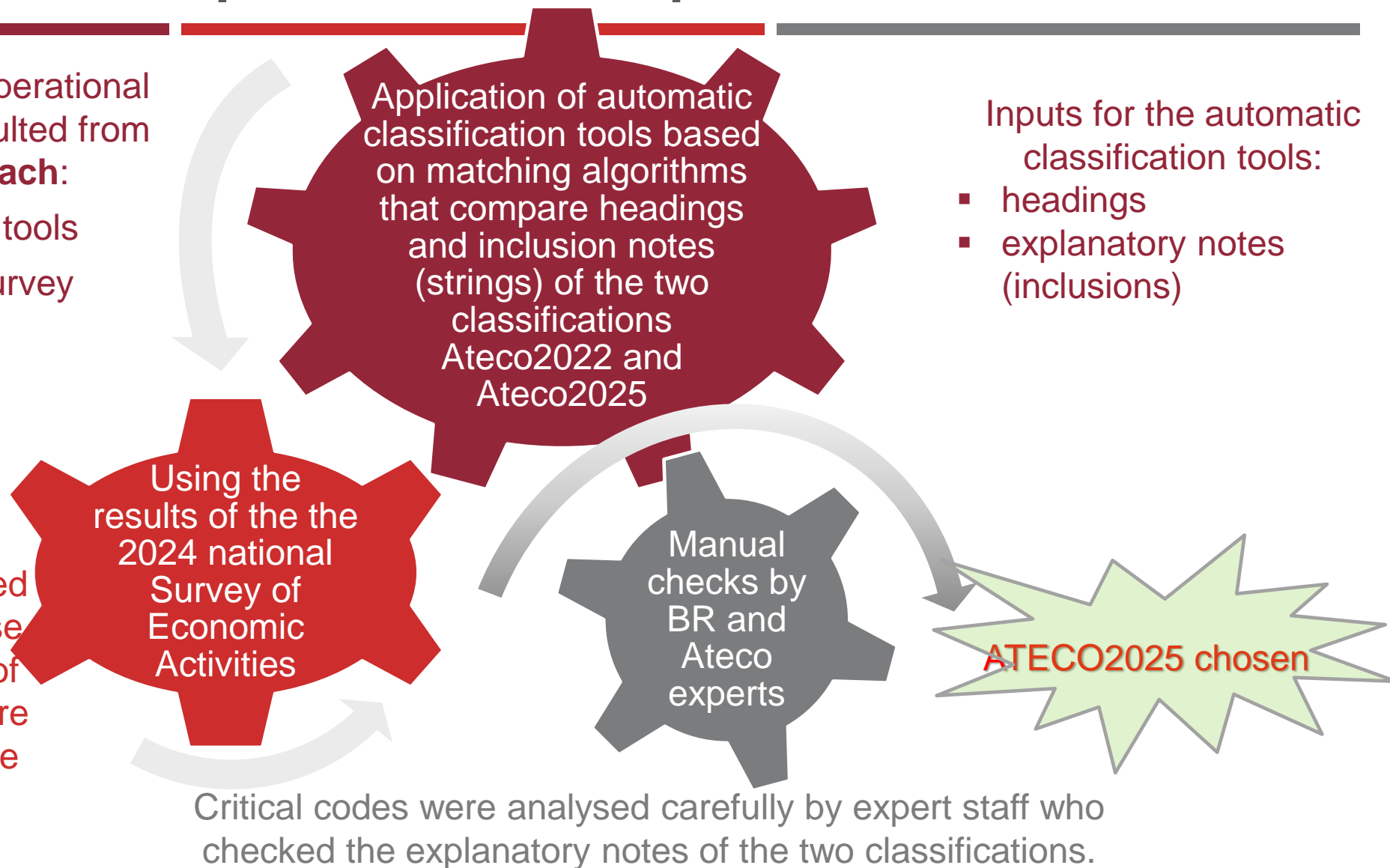
The development of the operational correspondence table resulted from an **integrated approach**:

- automatic classification tools
- results of the ATECO survey
- manual checks

Inputs for the automatic classification tools:

- headings
- explanatory notes (inclusions)

To support automatic unsatisfactory choices based on similarity scores because they were low, the results of the Ateco survey, if any, were considered, orienting on the most frequent empirical responses.



Developing a national operational correspondence table

ATECO2022

47.81 Retail sale via stalls and markets of food, beverages and tobacco products

ATECO2025

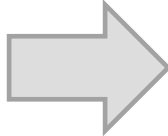
- 47.11 Non-specialised retail sale of predominately food, beverages or tobacco
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- 47.25 Retail sale of beverages
- 47.26 Retail sale of tobacco products
- 47.27 Retail sale of other food

ATECO2025 chosen

- the old activity is distributed proportionally across the new codes,
- It is not possible matching at the same hierarchical level
- It is necessary to aggregate to a higher level

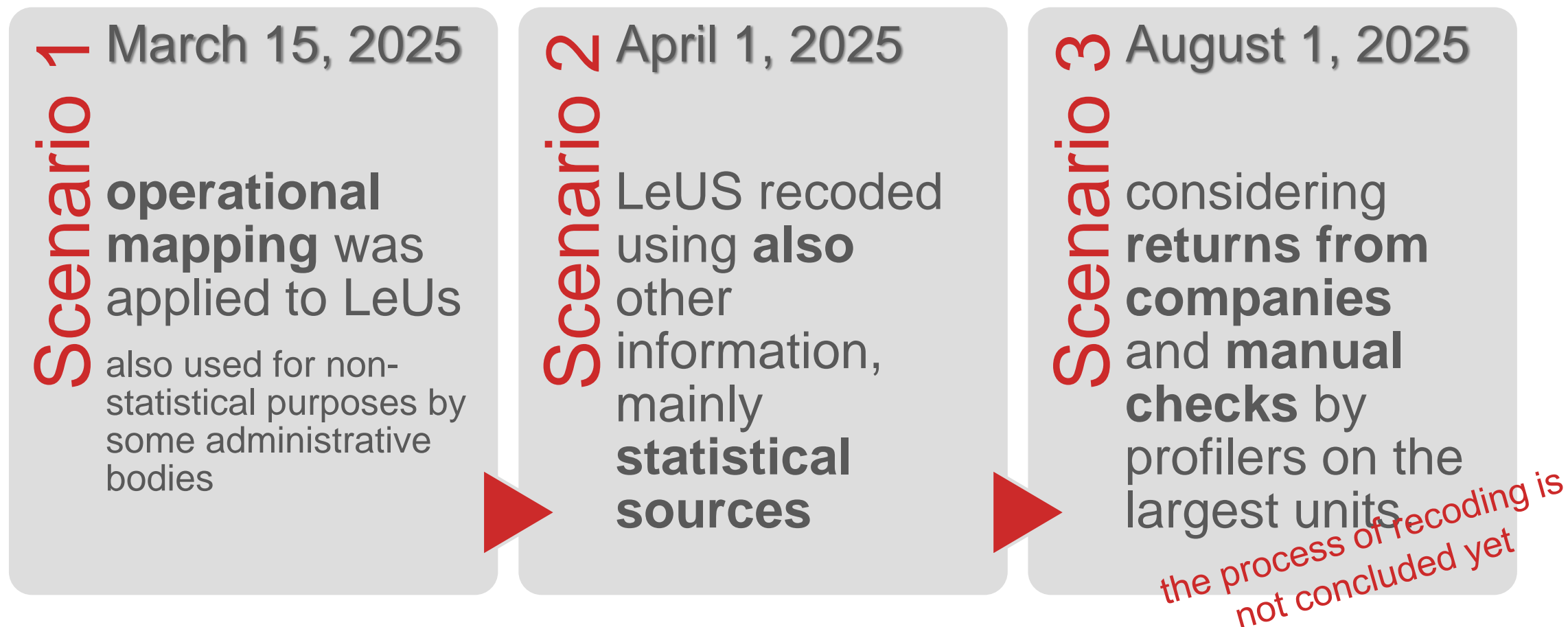
47.2 Retail sale of food, beverages and tobacco

Implementing the new classification in the Italian SBR

- statistical business registers are among the **first areas** to implement the new classification
- main step : 1 **recording** of SBR units
2 management of the **double coding** period  **December 2025**
- Italian **operational correspondence table** has already played a **central role** in the recoding of SBR for reference period 2023

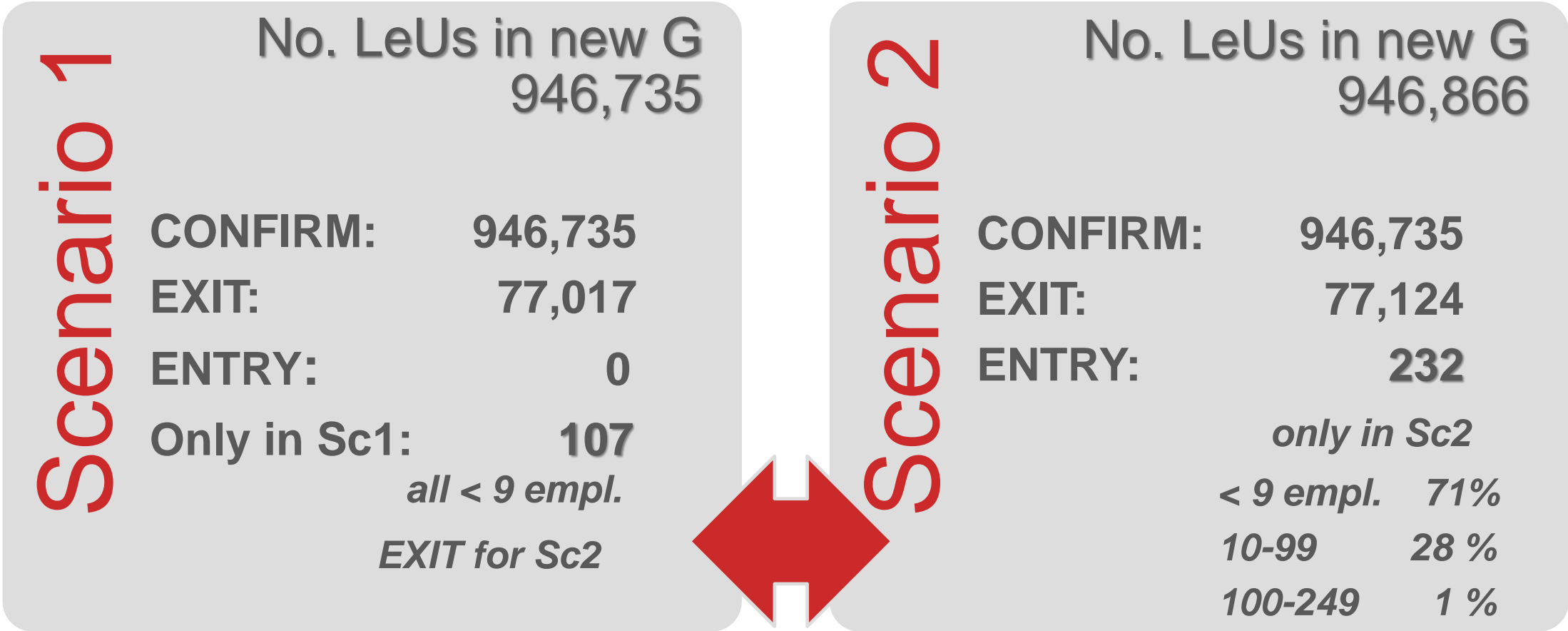
Implementing the new classification in the Italian SBR

3 incremental scenarios for reference period 2023



Implementing the new classification in the Italian SBR

Initial No. of LeUs classified in old G (reference year 2023) → 1,023,732



Implementing the new classification in the Italian SBR

	Scenario 1		Scenario 2	
	Notifications by Business Portal	Imputations by expert profilers	Notifications by Business Portal	Imputations by expert profilers
CHANGE code	1,078	188	1,085	198
<i>of which EXIT from G</i>	245	45	249	45
CONFIRM code	13,060	101	14,589	92
ENTRY in G	88	32	88	32
TOTAL code CONFIRM in G	14,226	321	15,762	322
TOTAL code EXIT from G	245	45	249	45

Conclusions and future developments

advantages

For massive reclassification of economic units

In collaboration with the chamber system

to transform complex match (1:M - N:M) in simple match (1:1)

quick and standardized solution

drawbacks

loss of information: some ATECO 2025 codes are never chosen as representative codes

in some cases it sacrifices granularity by choosing codes at the highest hierarchical levels

subject to statistical error due to the adoption of probabilistic approaches and practical choices

for initial operational reclassification phase by archival management bodies

progress

include all direct notifications and updates from enterprises

integrate other informative sources (fiscal data, accounting data)

Thank you for your kind attention

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