Open methodological standard for the processing of Mobile Network Operator (MNO) data for official statistics

The project

The European Statistical System (ESS) is developing an open methodological standard to support the reuse of location data from Mobile Network Operators (MNO) for statistical production.

This line of activities is implemented through two parallel projects focusing on different aspects.

The **Multi-MNO project** aims to:

- define the initial version of an open, end-to-end methodological standard for transforming a flow of raw location data into aggregate statistical indicators;

- develop a fully open-source reference implementation of the proposed standard and test it over real-world data from different MNOs in different EU countries.

The **Multi-MNO project** is conducted by a mixed team of statisticians and industry experts.

The **ESSnet MNO-MINDS** is a research project aimed to:

- identify the types of statistical data (e.g., sample survey or register data) that are most suited to be integrated with MNO data;

- develop novel methods for integrating MNO data with the selected statistical data.

MNO-MINDS is conducted by a consortium of 10 National Statistical Institutes (NSIs).
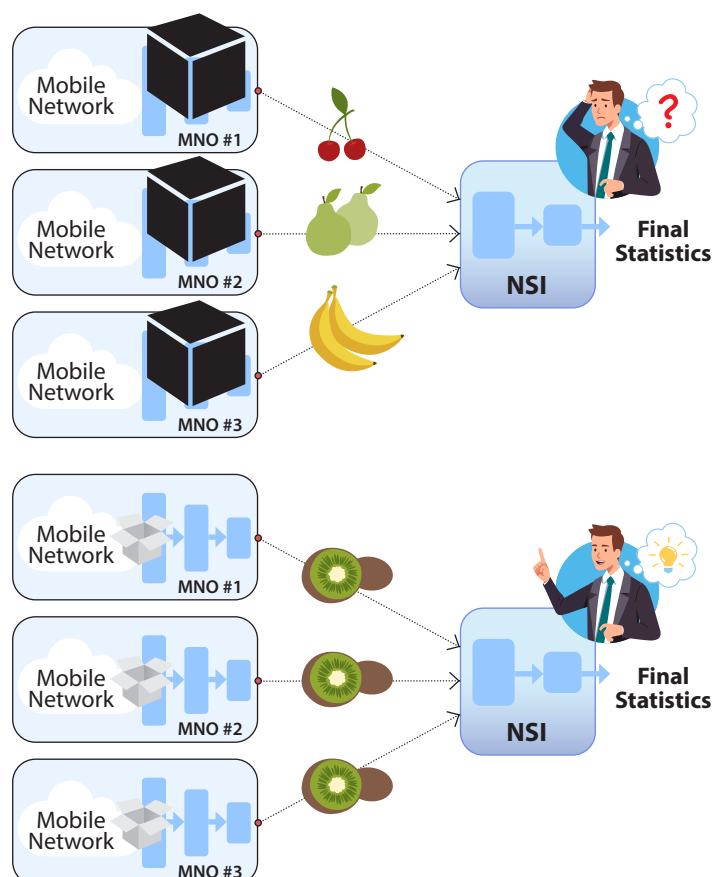
The motivation

The ESS strives to produce new, timelier and more informative statistics to benefit the whole society. To reach this goal, the ESS is preparing to reuse for statistical purposes some selected sources of non-statistical data, including data generated and held by the private sector. Among those, the location data that are routinely collected by MNOs are among the most promising but also challenging candidates.

Processing of MNO data for official statistics must be based on a fully open methodological standard adopted at the ESS level. This is necessary to ensure quality, interpretability, comparability and trustworthiness of the statistical products based on such data. Methodological standardisation facilitates the definition of fair partnership models between statistical authorities and MNOs. It also enables the identification of appropriate technical and organisational measures for the protection of personal data and business sensitive information.

Earlier experiences with MNO data has shown that producing high-quality statistics requires: (i) integrating data from multiple MNOs within each country; and (ii) integrating MNOs with statistical data.

Data processing based on open standard methodologies, combining data from multiple mobile operators and integrating with statistical data, are key ingredients of the ESS approach, as documented in the position paper prepared by the dedicated ESS Task Force.

The approach

Regular production of official statistics based on MNO data may start only after all the following conditions are put in place:

- A sound standard methodology with associated quality framework is developed.
- A sustainable partnership model between NSIs and MNOs is established.
- The necessary legislation at the EU level is adopted.
- A solid set of data protection measures coherent with the methodological framework are defined.

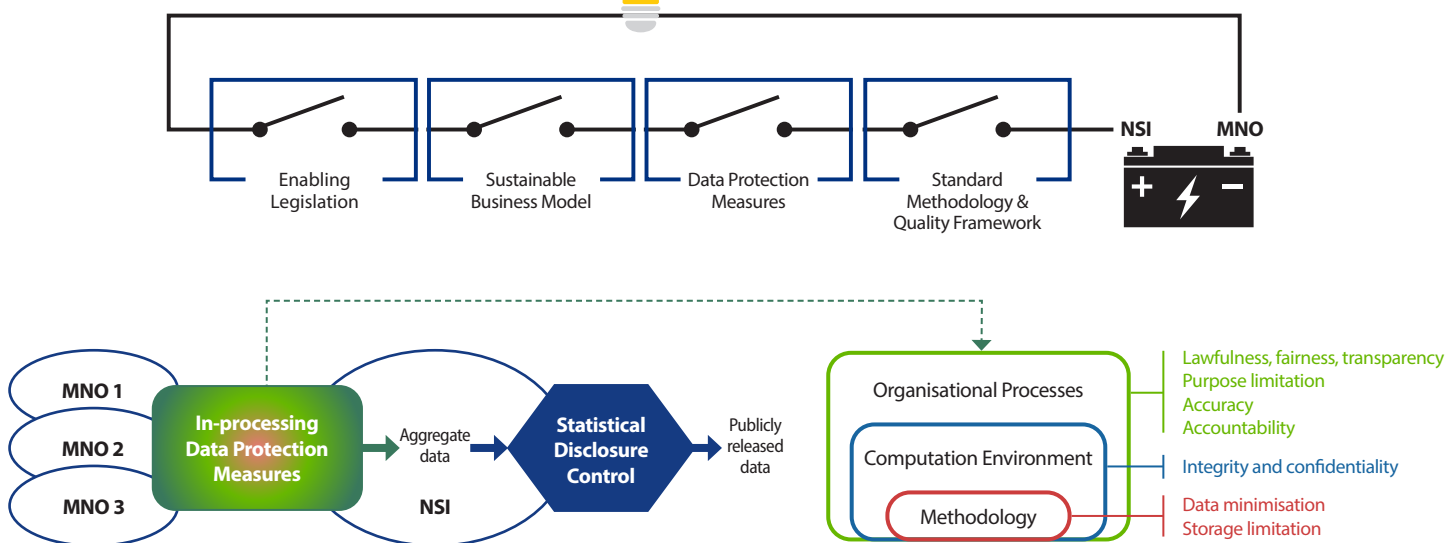The first item, namely methodological development, is addressed in the Multi-MNO and MNO-MINDS projects.

The results from these projects will provide a clear and detailed description of what and how MNO data are intended to be used, and for which statistical indicators. This will allow to define exactly who does what between MNOs and NSIs, their roles and responsibilities.

Building on the project results, a sustainable NSI-MNO partnership model will be developed in subsequent follow-up activities, in consultation with relevant stakeholders, taking into account the indications elaborated by the Expert Group on facilitating the use of new data sources for official statistics.

Meanwhile, EU institutions are in the process of introducing new legal frameworks to enable access to privately held data for European statistics through an amendment to Regulation (EC) 223/2009 on European statistics.

Official statistics based on MNO data

Enabling Legislation | Sustainable Business Model | Data Protection Measures | Standard Methodology & Quality Framework | NSI | MNO

MNO 1, MNO 2, MNO 3 → In-processing Data Protection Measures → Aggregate data / NSI → Statistical Disclosure Control → Publicly released data

Organisational Processes — Lawfulness, fairness, transparency / Purpose limitation / Accuracy / Accountability
Computation Environment — Integrity and confidentiality
Methodology — Data minimisation / Storage limitation

The team

The MNO-MINDS research project is carried out by a consortium of 10 NSIs from the following countries: Italy (coordinator), Austria, Germany, Spain, France, Netherlands, Romania, Sweden, Portugal and Norway.

The Multi-MNO project is carried out by a consortium composed of two NSIs (ISTAT, Italy and CBS, Netherlands), two private companies specialised in mobile data analytics (NOMMON, Spain and POSITIUM, Estonia) and GOPA (Germany) as coordinator. Multiple MNOs from different EU countries will support the test activities on real-world data.

More information

Landing page for activities related to MNO data at Eurostat:
https://cros.ec.europa.eu/MNOdata4OS

Multi-MNO project website:
https://cros.ec.europa.eu/multi-mno-project

ESSnet project MNO-MINDS website:
https://cros.ec.europa.eu/book-page/mno-minds

Position paper 'Reusing Mobile Network Operator data for Official Statistics: the case for a common methodological framework for the European Statistical System' (2023 edition):
https://ec.europa.eu/eurostat/en/web/products-statistical-reports/w/ks-ft-23-001

'Empowering society by reusing privately-held data for official statistics – A European approach' (2022 edition):
https://ec.europa.eu/eurostat/web/products-statistical-reports/-/ks-ft-22-004

Regulation (EC) No 223/2009 on European statistics - consolidated text with amendments   https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02009R0223-20241226&qid=1734684433512

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