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Towards an open methodological standard for the use of Mobile Network Operator (MNO) data in Europe: the Multi-MNO project by Eurostat
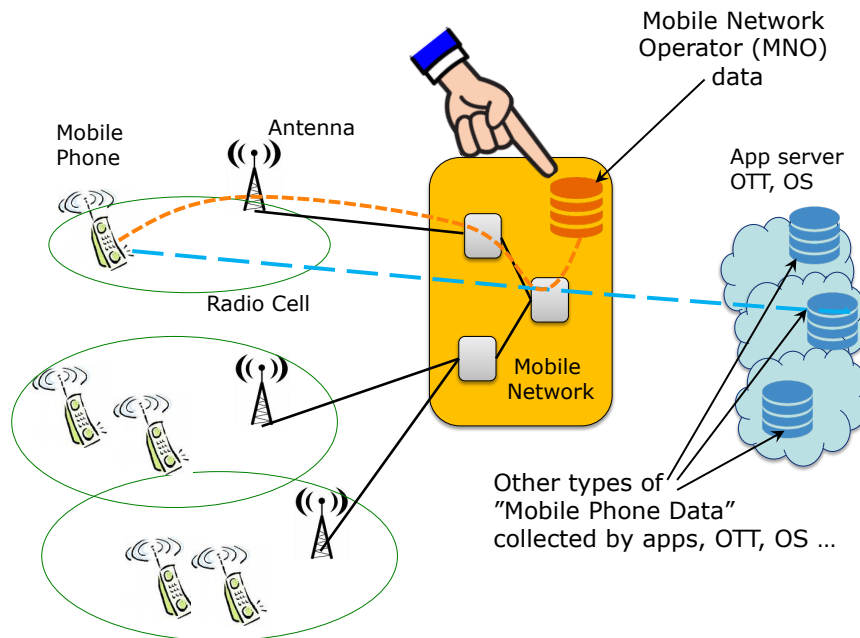
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What are MNO data?

- *Location data collected by Mobile Network Operator (MNO)*
  - Generated <u>by the mobile network</u> upon interaction with the mobile device
  - Collected primarily for mobile service delivery purposes e.g. billing (CDR) and network maintenance (signalling)
  - Combined with radio cell deployment data (e.g., antenna position) can reveal approximate geographical position

Location data generated <u>by the mobile device</u> and collected by apps, Operating System (OS), Over-The-Top (OTT) companies etc. are also called "Mobile Phone Data" (MPD) but they are not "MNO data" and are not in the scope of this presentation
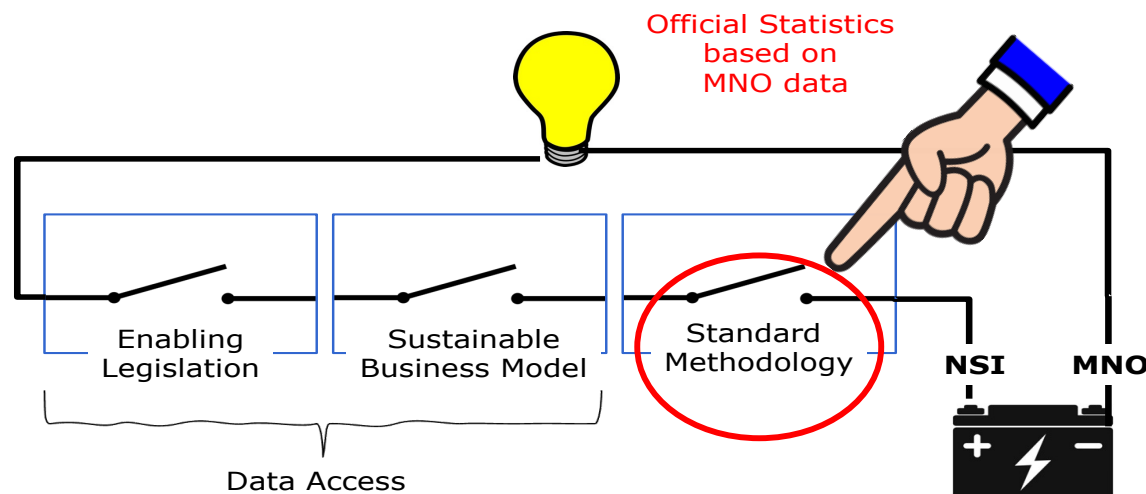
The vision: MNO data as source for (future) official statistics in Europe

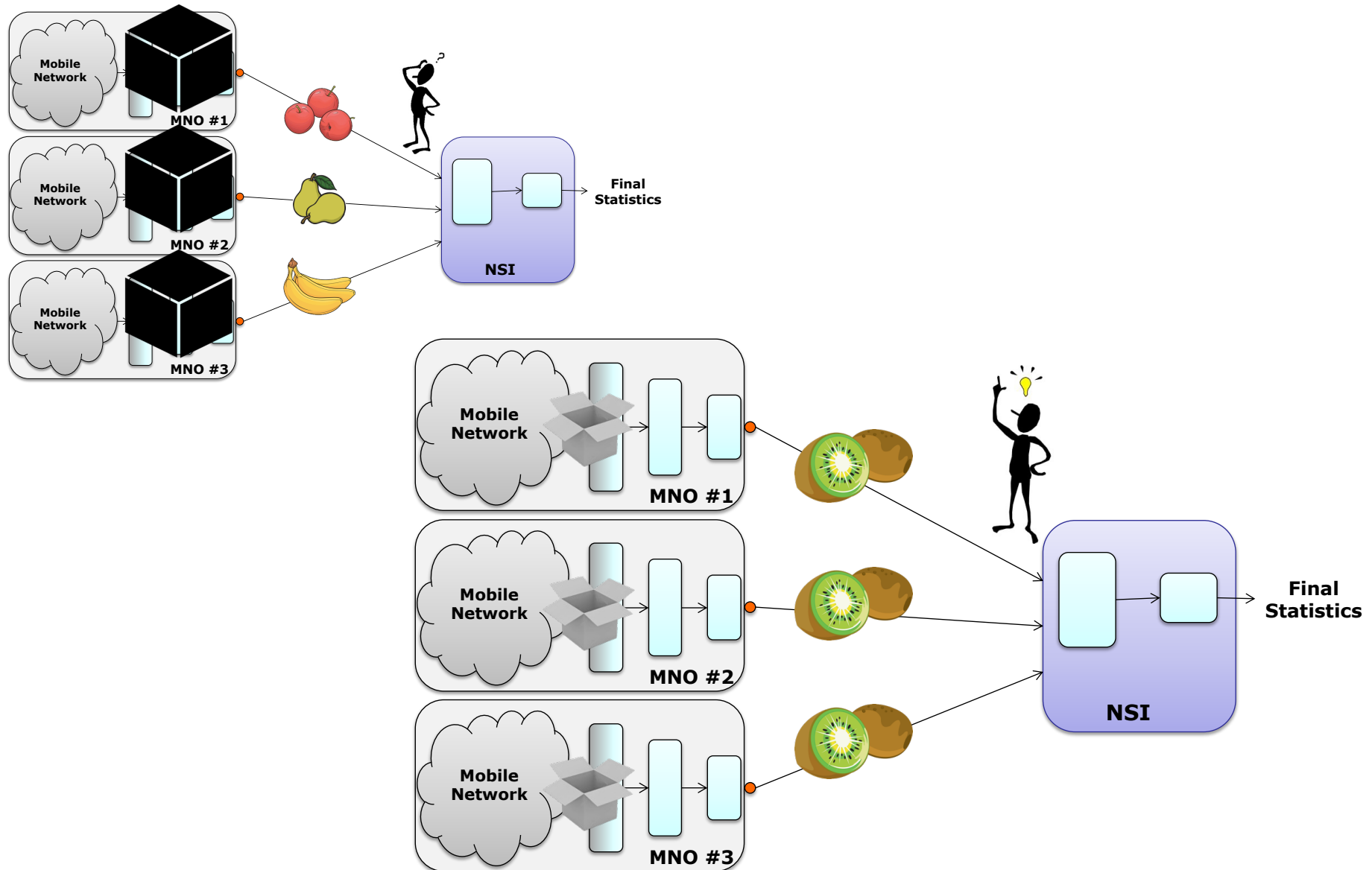*Starting in 202x, MNO data will be used to produce regular official statistics in Europe*

- *based on sustainable partnerships between statistical authorities & MNOs*
- *(re)using data from all main MNOs in each European country…*
- *… possibly in combination with other non-MNO data (for calibration)*
- *incorporating very strong technical and organisational measures for protecting data confidentiality, agreed at the European level, for safeguarding individual privacy and business secrecy;*

based on a common, standardized and fully open methodology and quality framework

Official Statistics based on MNO data

Enabling Legislation

Sustainable Business Model

Standard Methodology

NSI   MNO

Data Access

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Standard methodology to enable combination of data from multiple MNOs

Activities in the European Statistical System

- *2016-2020 Various explorative projects (e.g., ESSnet Big Data I and ESSnet Big Data II, national research projects)*

- *ESS Task Force on Mobile Network Operator data for Official Statistics (TF MNO)*
  - **Launched in 2021, 18 countries participating, chaired by Eurostat**
  - **Support methodological development, enables networking and exchange of experiences between NSI**

- *2023-2025 Multi-MNO project*
  - **First-of-its-kind project in the ESS: fixed team of industry specialists and NSI experts tasked to co-develop together (a proposal for) an open methodological standard including quality framework + release open-source software implementation + demonstration on real-world data across multiple MNOs**

- *Other research project planned to start in 2023*
  - **Focus on methods for integration of MNO and non-MNO data (e.g., survey data, census data, other big data sources etc.)**

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Multi-MNO Project – Factsheet

- *Service contract awarded following open call for tender*
  - https://etendering.ted.europa.eu/cft/cft-display.html?cftId=10149

- *Started in Jan'23 - total duration 2.5 years until mid-2025*

- *Project consortium*
  - **GOPA Germany (consortium leader)**
  - **POSITIUM Estonia (consortium partner)**
  - **NOMMON Spain (consortium partner)**
  - **ISTAT Italy (subcontractor)**
  - **CBS Netherland (subcontractor)**
  - **5x MNOs (subcontractors) - ORANGE Spain, VODAFONE Spain, VODAFONE Italy, A1 Slovenia, POST Luxembourg**

- *+ Advisory Board composed of individual independent experts acting in their personal capacity*

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Multi-MNO Project – Factsheet

- *Focus on a selection of use-cases in various domains, to be defined within the project*
  - **Tourism, Demography, …**
- *Develop (a proposal for) a comprehensive methodological framework for transforming MNO data into statistics*
  - **Methods, processes and quality aspects included**
  - **If succesful, it can be then adopted by the ESS as standard**
- *Open, transparent and reproducible*
  - **A reference software pipeline will be released open-source under EUPL licence, thoroughly documented and complemented by what is needed to enable independent reproduction and alternative (possibly proprietary) implementations (e.g., functional tests, benchmark data)**
- *Demonstrate its feasibility*
  - **On real-world data from 5x MNOs from 4x countries**
  - **Local processing of pseudonymized data at MNO premises; no transfer of PII data but only aggregate (non PII) statistics**

PII Personal Identifiable Information

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High-level requirements

- *Pan-European perspective*
  - **Developing methodology that may work (prospectivey) for all principal MNOs in all EU countries, assuming (prospectivey) comparable data access conditions in all EU countries**
  - **Tailored to European state-of-play in mobile technology, services, usage and statistical needs**

- *Evolutionary perspective*
  - **Aim at methodological standard "evolvable by design" (through future "releases") and forward looking**
  - **Anticipate in the design today the methodological solutions and variants that will be needed and implemented tomorrow**

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Thanks for your attention!

For follow-up:

overview of Eurostat activities on MNO data
https://ec.europa.eu/eurostat/cros/content/mobile-network-operator-data-official-statistics-mnodata4os_en

(temporary) page of MultiMNO project
https://ec.europa.eu/eurostat/cros/content/multi-mno-project_en