

IFC-Bank of Italy Workshop on "Data science in central banking"

18-20 February 2025

SDMX enabled users' processes at the Bank of Italy¹

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¹ This contribution was prepared for the workshop. The views expressed in this publication are those of the authors and do not necessarily represent the official views of the Committee, its members, or the BIS.

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SDMX @ Bank of Italy

- The Bank of Italy collaborated to the creation of the standard and it continues to work on its evolution, being part of the governing bodies (Technical and Statistical Working Group) and producing Open Source Software which is made available to the user community.
- The SDMX Connectors have been presented for the first time in the 2011 SDMX Global Conference. The software has then been released as an open source in 2014.
- During the last 10 years the connectors became a well known tool among data scientists, inside and outside the Bank of Italy.

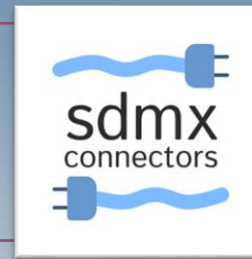
The SDMX Connectors

SDMX Providers

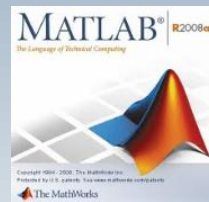
European Central Bank
OECD
EUROSTAT
IMF
International Labour Organization
Bank for International Settlements

UNICEF
UN Data
World Bank
Pacific Data Hub

ISTAT
Bundesbank
INSEE
Australian Statistics
Statistics Canada



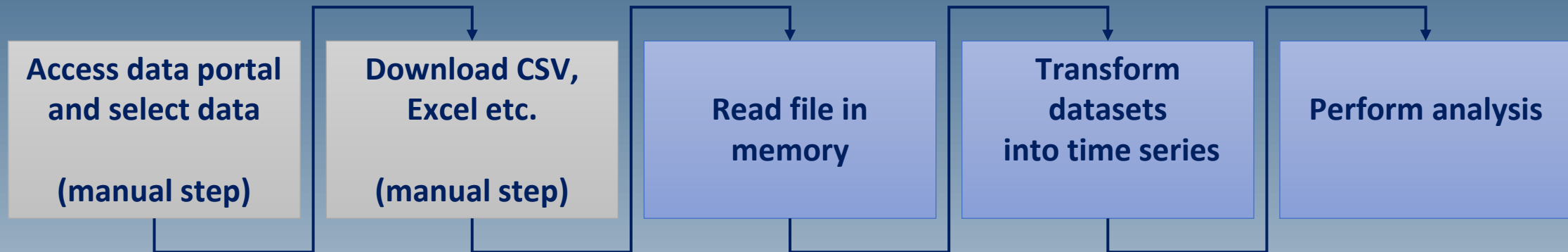
Data Tools



Automation and efficiency in user programs

Main use case: reading time series from a remote provider and seamlessly use them in a data analysis tool (i.e R, Matlab, SAS, Python, Excel, STATA)

Without the SDMX Connectors



With the SDMX Connectors

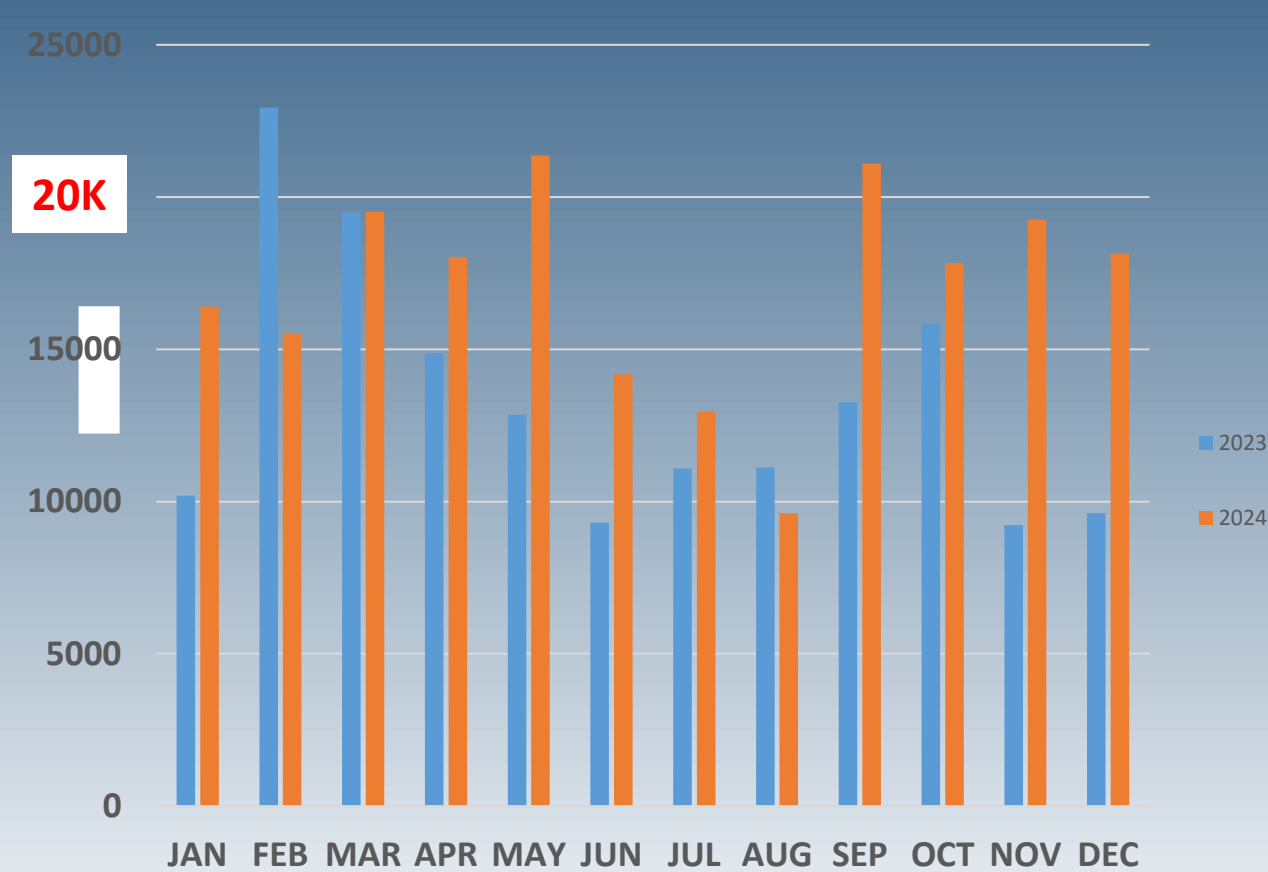


The whole data process can be automated with:

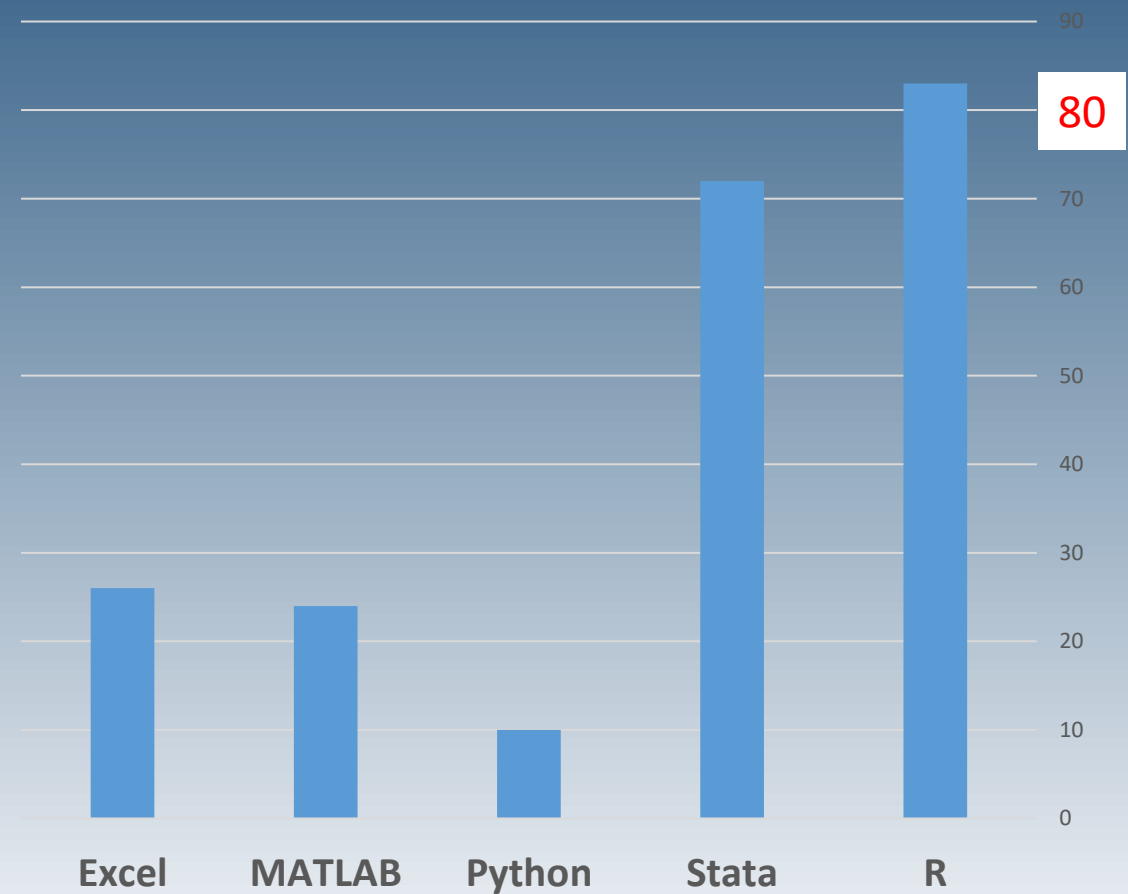
- Fewer risks of **error**
- **Faster** processing
- Increased **transparency** and **reproducibility**

The SDMX Connectors in the Bank of Italy

User Queries



Tools (unique users)



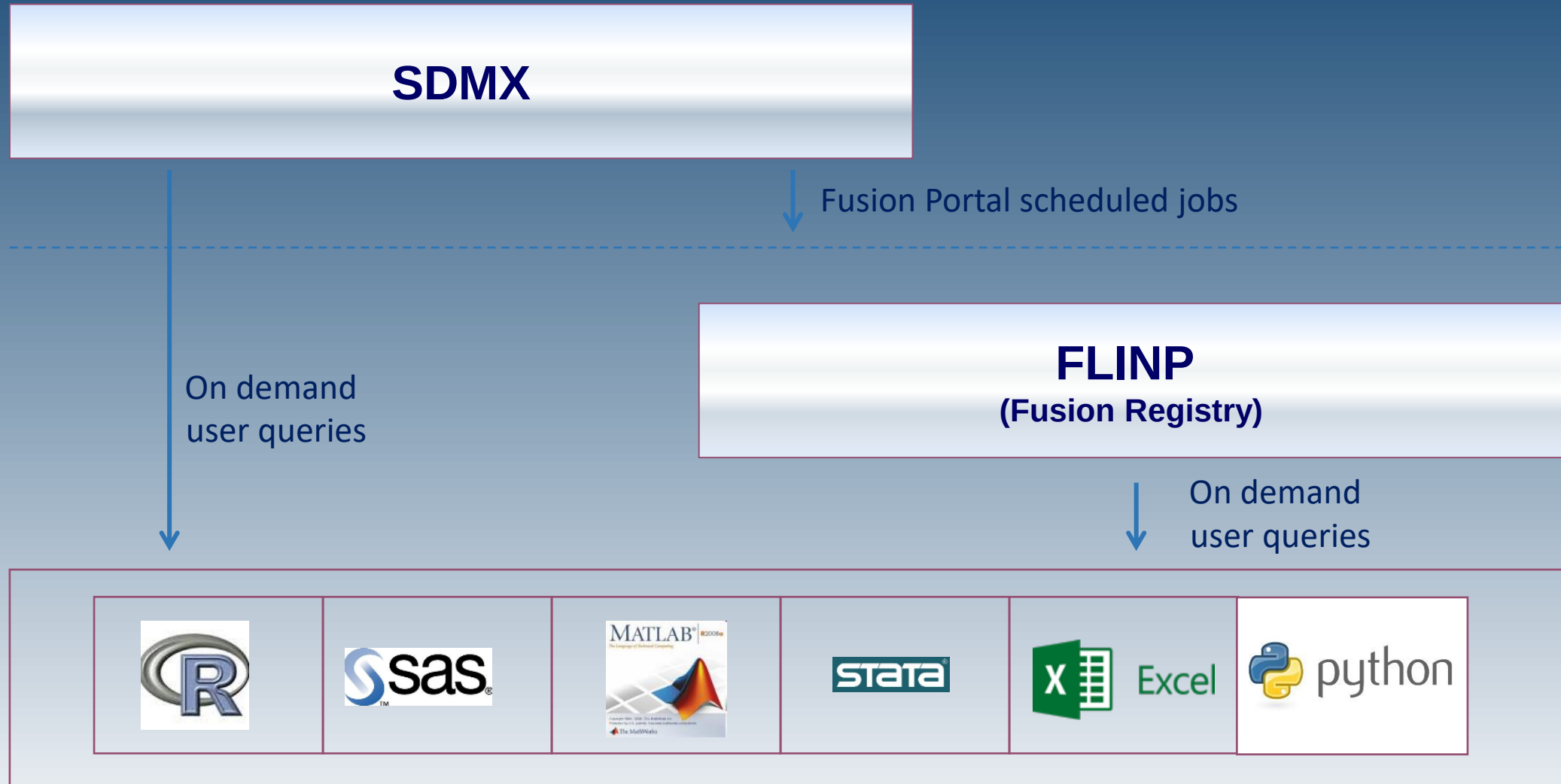
The SDMX Connectors in the Bank of Italy

- Every year at the Bank of Italy, more than **200 users** perform approximately **200K SDMX queries** in their programs
- **Efficiency, robustness, ease of use**
- **Data quality** (metadata, reproducibility)

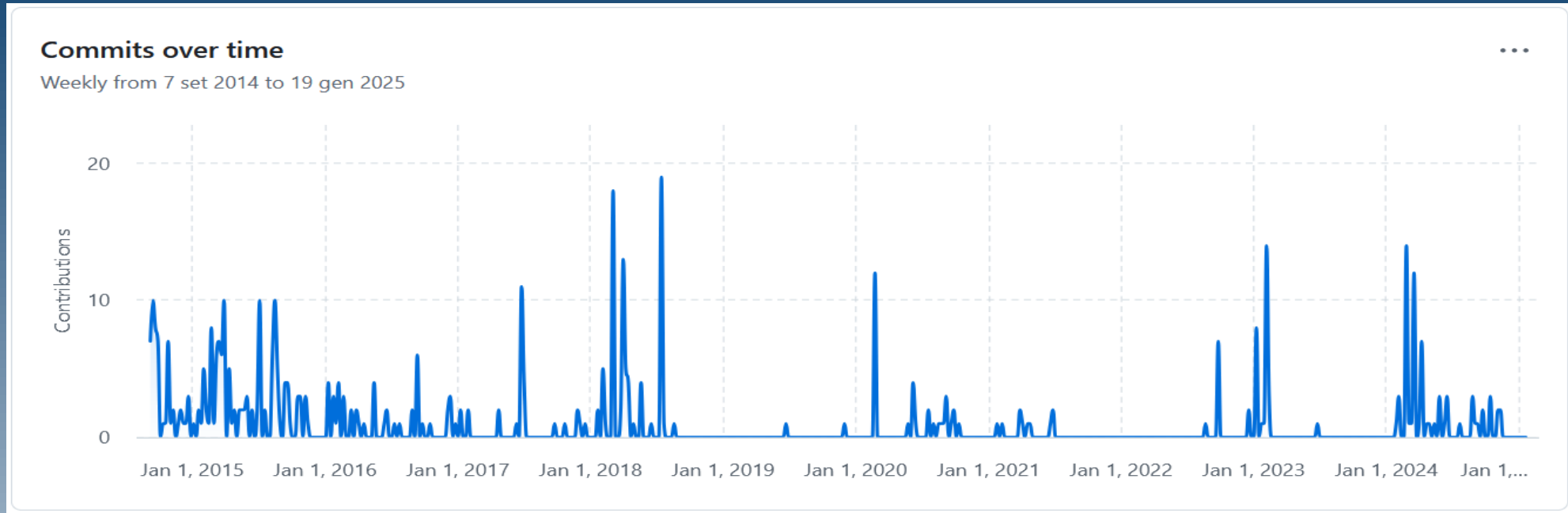
The SDMX universe is perceived by users as an **open and flexible database of certified statistical data**, equipped with a common language that makes it as usable as in-house managed databases (and in some cases, more usable), but “*with great power comes great responsibility*”

- Need for clear and consistent governance and a dissemination **strategy** towards users
- Data users must be considered an integral part of the dissemination process: a **symbiotic** relationship is established between the user and the data producer
- **Changes** (technical and structural) must be communicated in a timely manner
- **Downtimes** are a big problem for users

FLINP: internal SDMX provider for critical data



Ten years of the Open Source Project



- 23 releases in Github (pushed to MatlabCentral and CRAN as well)
- 199 Issues closed
- 65 Pull Requests
- 46 forks in Github
- 55.000 downloads from CRAN (RJSDMX)
- 5.000 downloads from github (mainly MATLAB and STATA)

What next?

- **SDMX 3:** the API are already supported, but not the new formats. The **sdmx-core** library (that we already use in the VTL Engine) will probably be used
- **FLINP:** the solution is far from perfect, but we think the strategy is correct. The evolution of this setting is under investigation
- **AI:** today one of the most popular features of the SDMX Connectors is the SDMX Helper: an interactive data/metadata browser that simplifies users in searching the data they need. AI will play an key role in this use case
- **VTL:** we foresee a number of use cases where SDMX data and VTL rules will be used in data tools. Collaboration with the **sdmx.io** community has just started.

Thanks!

(questions?)

<https://github.com/amattioc/SDMX>

<https://github.com/vpinna80/VTL>

<https://www.sdmx.io/>