EUROPEAN CENTRAL BANK

EUROSYSTEM

The SPACE Project

SDMX in Action for the Statistical Data Production at the ECB

SDMX GC

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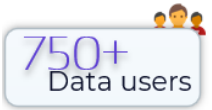
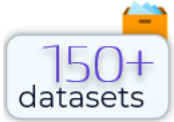
The SPACE System

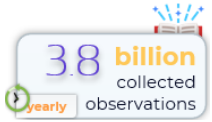
Statistical Production And Compilation Environment

An integrated system**, fully based on SDMX**, used to**:**

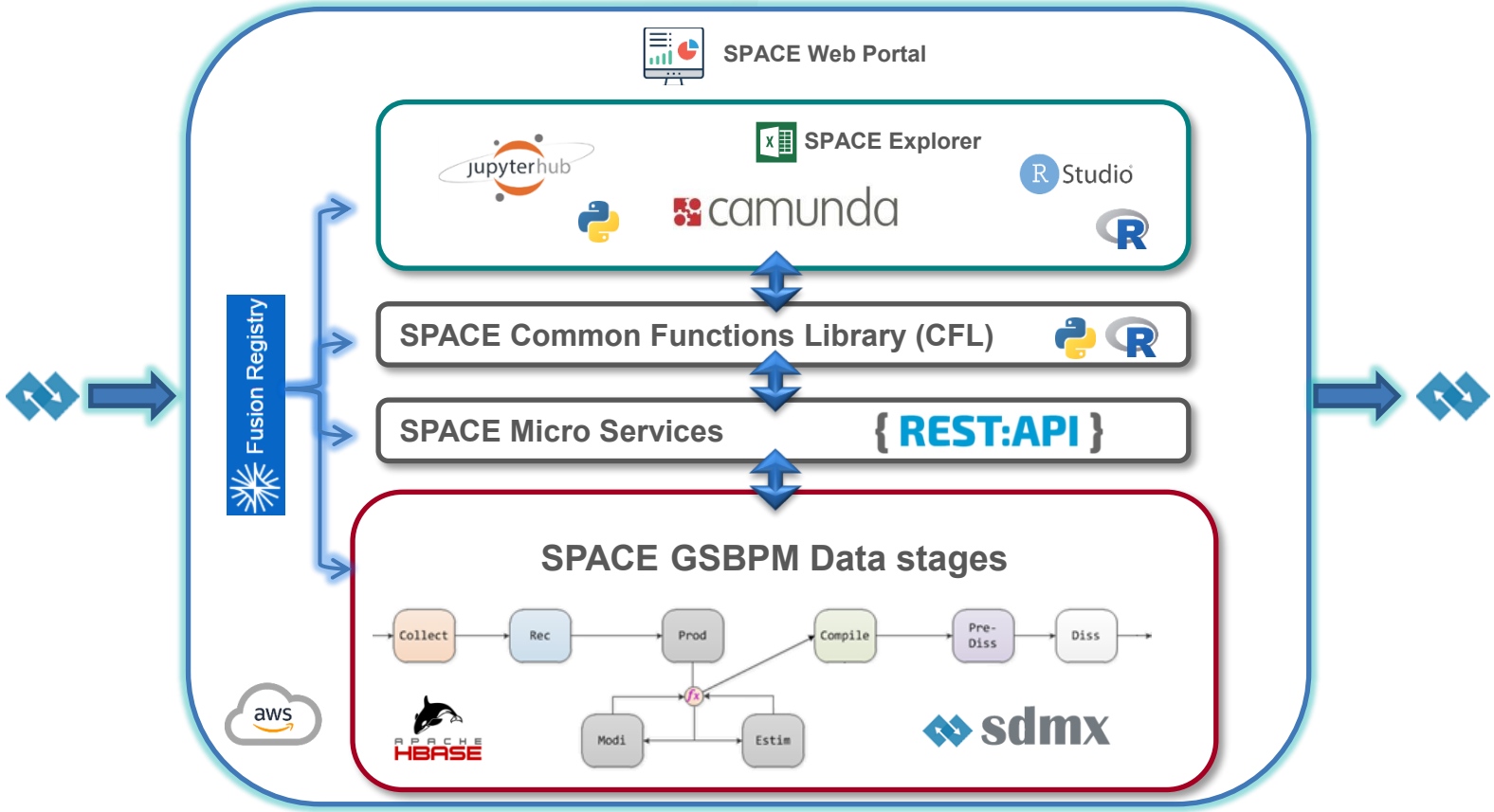
- **collect/validate** daily macroeconomic/financial data,
- **compile** official ESCB statistics and indicators,
- **disseminate** them to other systems/organisations and
- **publish** them on the **ECB Data Portal**



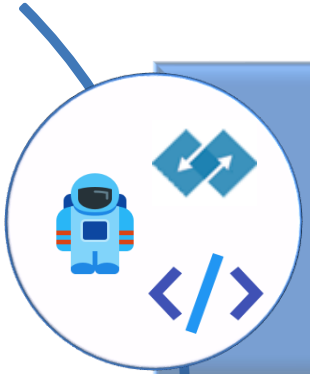




SPACE – SDMX in Action



Key findings and Lessons Learned



Positive impact on the new generation of statisticians by offering Python with SDMX to implement business processes, empowering data producers to configure, automate, and execute business processes using standard tools

The full integration with the **SDMX framework facilitates seamless data exchange, interoperability and integration**, enabling the ECB to effectively disseminate official statistics to various internal systems and external stakeholders and improves users SDMX awareness

… and the SPACE SDMX journey doesn't stop here …

SPACE + SDMX – The journey continues with AI

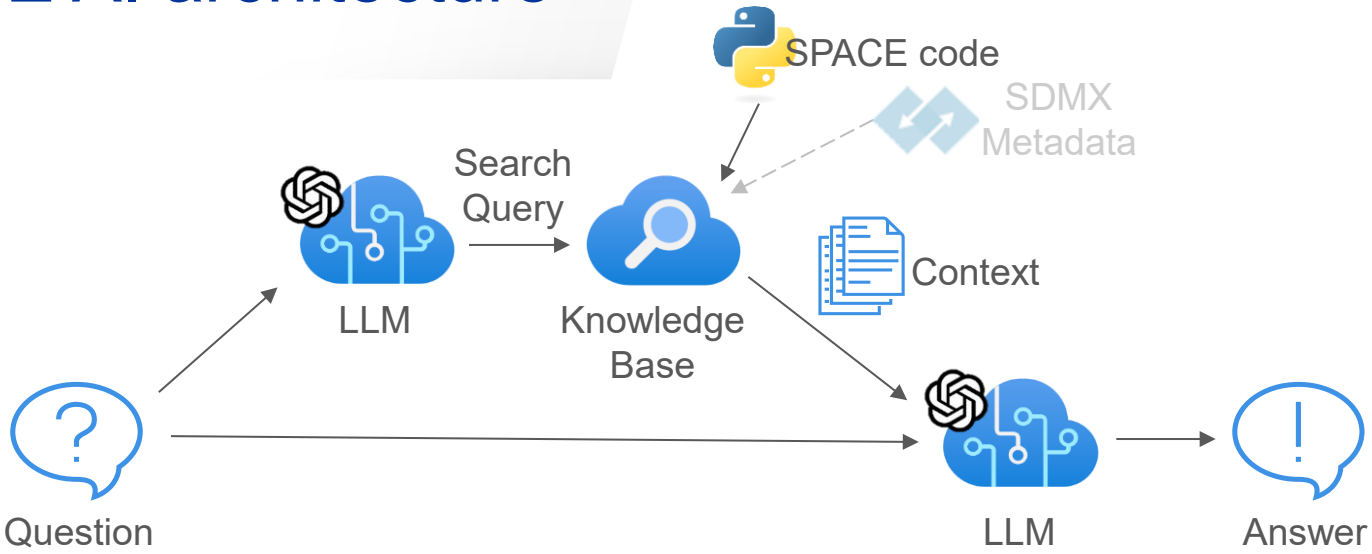
What we are trying to solve

- The SPACE platform is now in production with several hundred users starting to require support.
- It uses a comprehensive Python library for compiling and disseminating data and SDMX metadata.
- Many users are just beginning to learn the library's functionalities.
- Many user queries being sent to the support team.

What SPACE AI aims to provide

- Users can query in natural language and receive SDMX-aware SPACE Python code.
- A self-service solution, making users independent from the support team.
- Aims to improve efficiency and proficiency with the SPACE Python library, supporting successful platform adoption.
- Democratize access to the platform, empowering users of all skill levels to harness its full potential.

SPACE AI architecture



- The RAG approach leverages an index built from the library's docstrings, official documentation, and over 100 existing repositories that implement processes using the official library.
- It prioritizes 300+ frequently used functions to ensure optimal relevance and usability.

SPACE AI results and next steps

Accuracy

- Expert-reviewed results show a 69% accuracy rate in generating correct answers.
- Automatic evaluation: 91% of the expected functions are retrieved within the top 5 results.

Challenges and the future

- The changing AI landscape, different models, agents…
- Bringing the solution to production

- Feeding it our internal SDMX metadata (DSDs, dataflows, codelists)
- Developing automatic evaluation
- Extend functionality to "Assistant for debugging or improving code"

SPACE AI Demo