



EUROPEAN CENTRAL BANK

EUROSYSTEM

# The SPACE Project

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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**




150+  
datasets



15+ billion  
observations



1,281  
files  
Daily pick



3.8 billion  
collected  
yearly observations

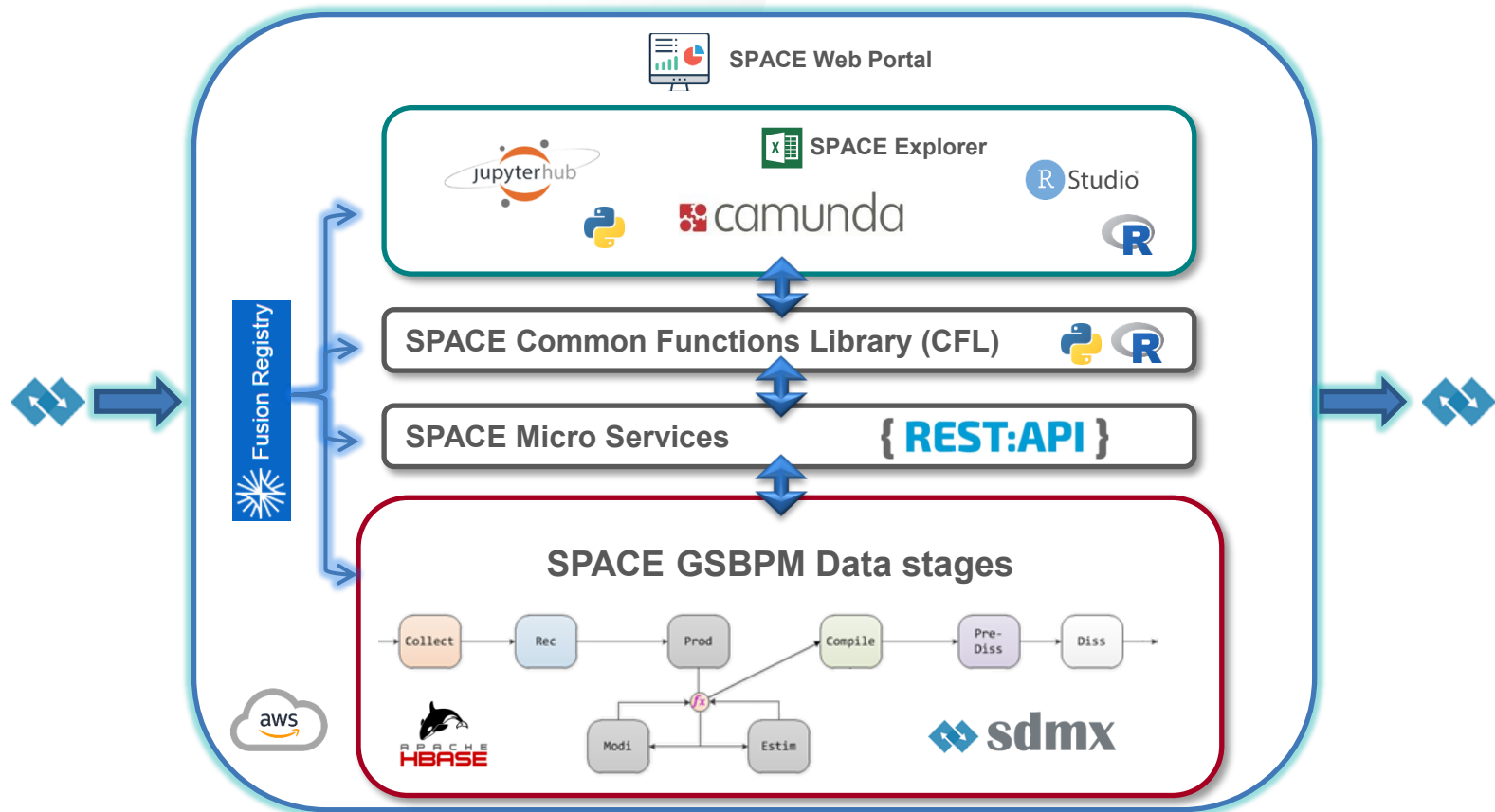


350  
power  
users

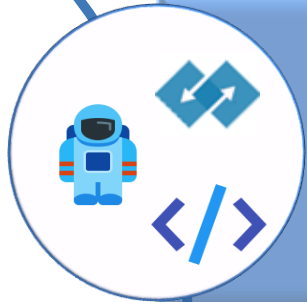


750+  
Data users

# 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.

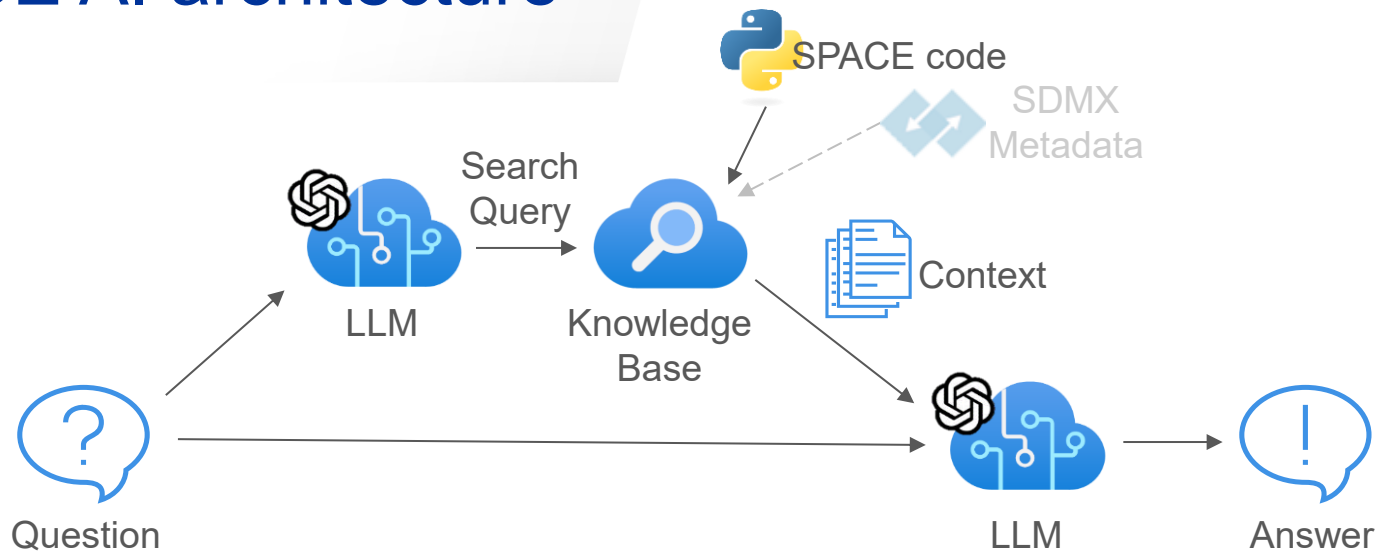


## What SPACE AI aims to provide

- 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.

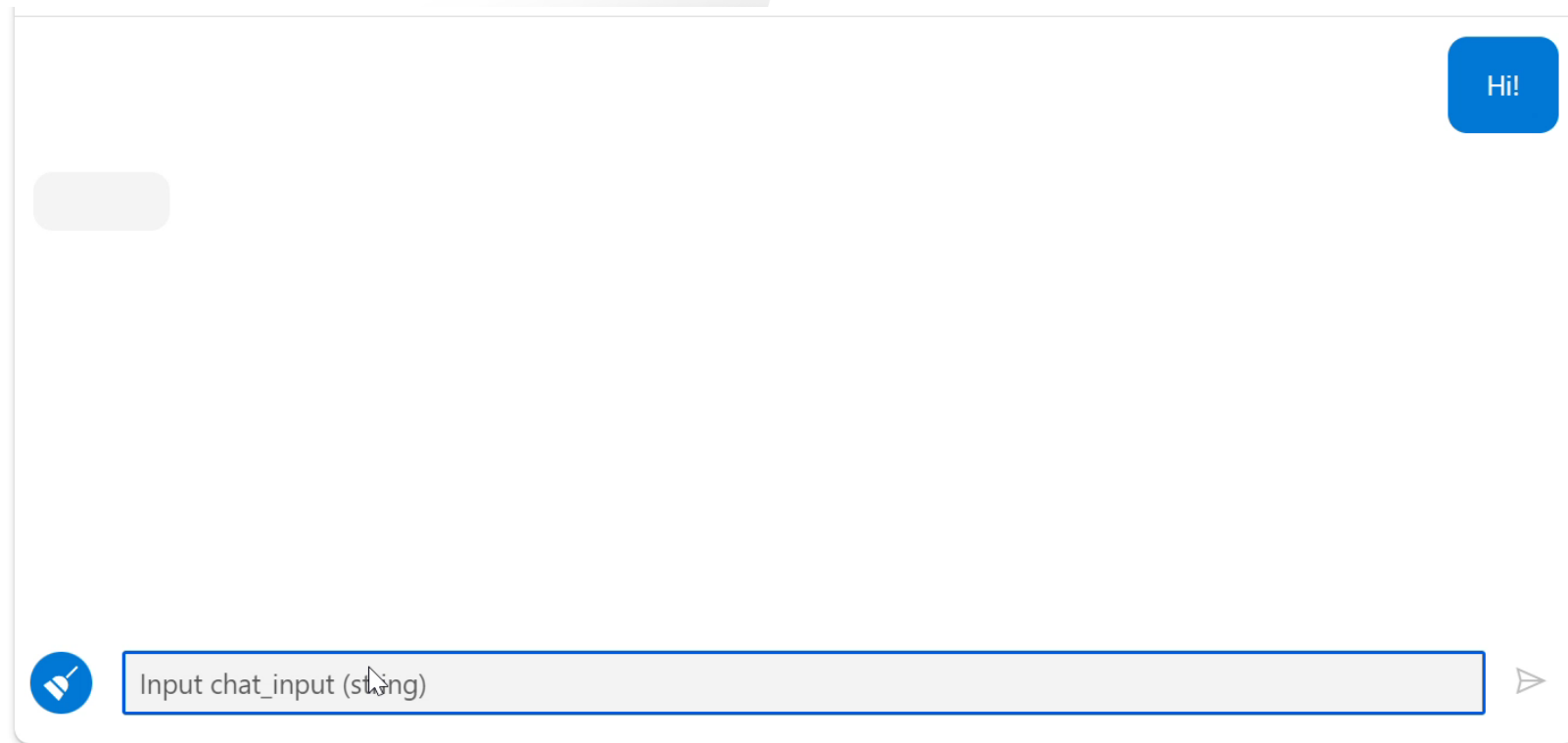


## Challenges and the future

- 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



The image shows a web interface for the SPACE AI Demo. It features a large, empty white rectangular area in the center, which serves as a chat window. In the top right corner of this area, there is a blue rounded square button with the text "Hi!". In the bottom left corner, there is a blue circular icon containing a white speech bubble with a pencil. To the right of this icon is a long, light gray rectangular input field with a blue border. Inside the input field, the text "Input chat\_input (string)" is visible, with a mouse cursor hovering over it. To the right of the input field is a blue triangular send button.