

“SDMX Global Conference 2023”

Rome, Italy

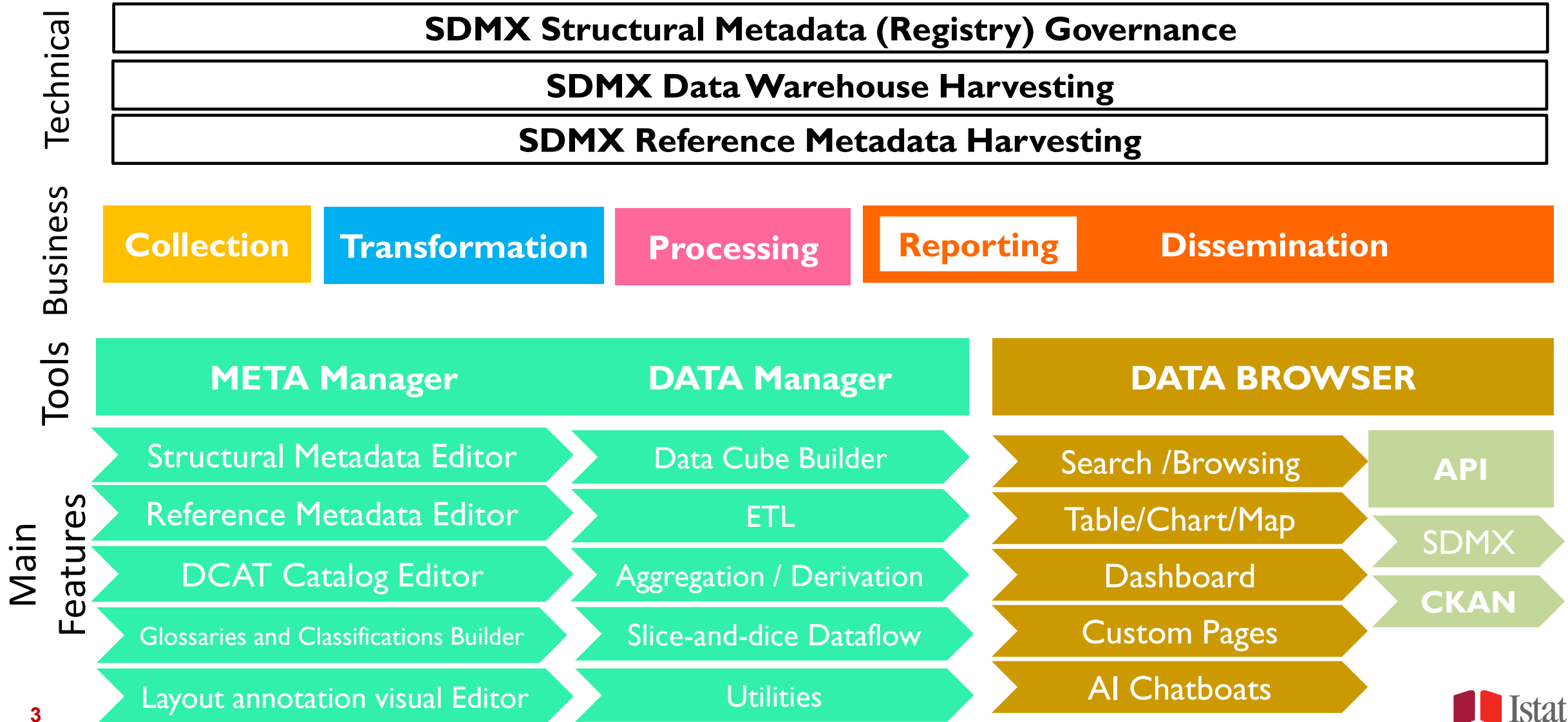
29 September 2025 – 03 October 2025

Bridging complexity and capacity: the strategic evolution of the Istat Toolkit to accelerate SDMX adoption and facilitating implementations

Inside the presentation

- ❑ Business and technical processes supported by the SDMX Toolkit
- ❑ The Toolkit's evolution: simplifying while expanding capabilities, scalability, and interoperability
- ❑ Integrating AI to reduce access barriers for Data Users
- ❑ Chatbots in the Data Browser Web Application
- ❑ Conclusions

Business and Technical Processes supported by the SDMX Toolkit



The Toolkit's evolution: simplifying while expanding capabilities, scalability, and interoperability

Easy SDMX

Extract/Converting

Transform, Validate,
Transcoding

Processing

Mapping

- ❑ Excel files for creating DSDs, Data Cubes, Data Flows, Mappings, and loading data



- ❑ Excel
- ❑ .PX
- ❑ CPro
- ❑ Excel2MSD
- ❑ Excel2Json
- ❑  Parquet



- ❑ SDMX Pull Requestor

- ❑ Editor to create formulas to be applied as transformation rules during data ingestion
- ❑ Schedulable actions for data aggregation and derivation
- ❑ Structural and semantic mapping between heterogeneous data structures, along with the integration of legacy databases

Scalability and high-performance as primary conditions

- ☐ Decoupling M2M access from Web GUI access
- ☐ Scheduling large-scale data loading or data transfers across different environments
- ☐ Caching of data and metadata to improve response time in the Data Browser

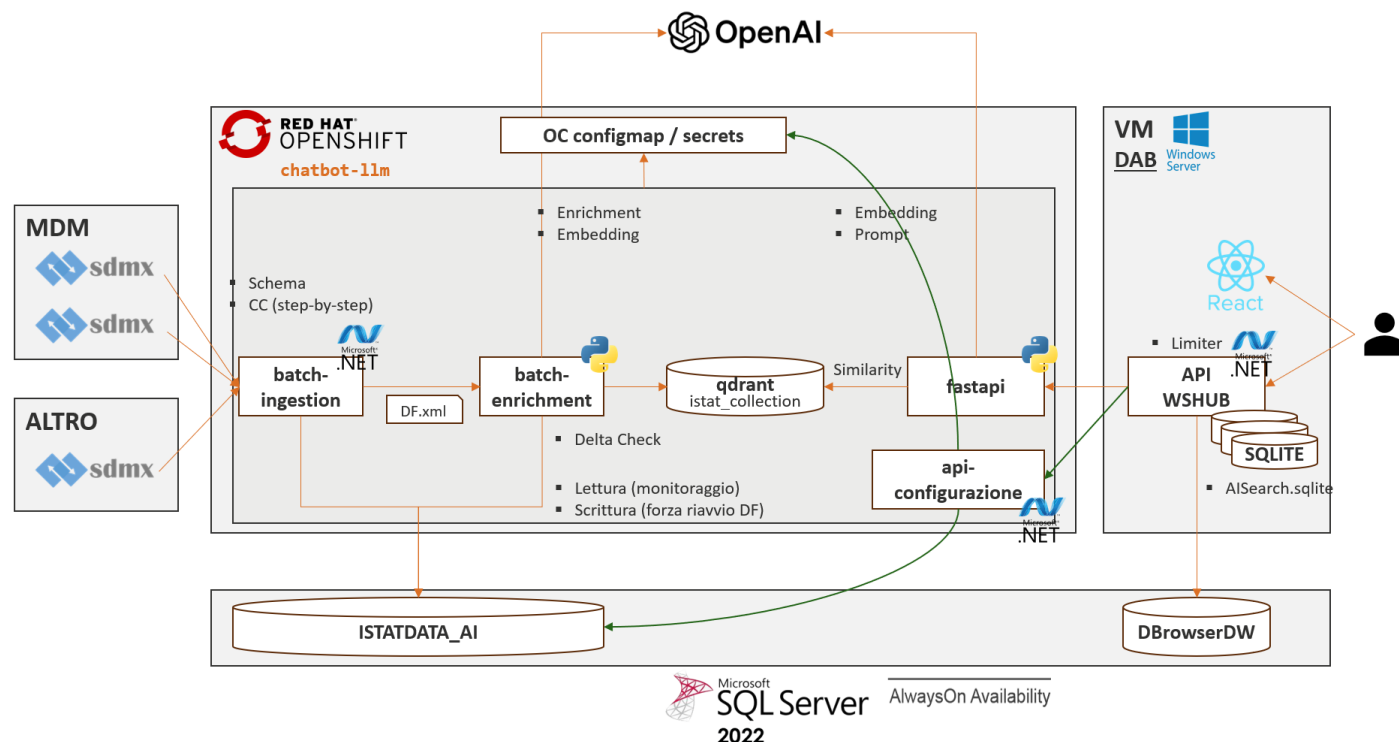
Tests in Istat's dissemination environment used

- ☐ Databases with over 10 billion data points
- ☐ Data cubes with more than 100 million data points

Integrating AI to reduce access barriers for Data Users

AI backbone component

- ❑ Connects directly to SDMX APIs, retrieving both structural and content-related metadata essential for constructing relevant and context-aware “*data products*”
- ❑ Accepts requests from a *Chatbot*
- ❑ Interfaces with *OpenAI* services to interpret and generate natural language responses



Chatbots in the Data Browser Web Application

Search AI assistant

AI Assistant

A new way to get data and use the analytics tool, using natural language.

🔍 Show me

The available information about transport.

🔍 Give me

Statistics on interpersonal relationships in free time.

🔍 Give me

The main indicators on productivity growth.

✎ Show me the main indicators on Italian Economy in 2024

Search results:

✓ National Accounts

- ☐ Annual national accounts (2)
- ☐ Quarterly national accounts (2)
- ☐ Regional accounts (2)
- ☐ General Government statistics (1)
- ☐ Productivity measures

20 datasets:

📊 Indicators (GDP ratio) 📊 M

National Accounts > Annual account

Dimensions considered in the table are Frequency, Aggregate, Valuation, Adjustment,

📊 Main productivity indicators 📊 M

National Accounts > Productivity mea

Dimensions considered in the table are Fr

Aggregate, Breakdown by industry (NAC



Visualization AI assistant

Indicators (GDP ratio)

Frequency: Annual, Territory: Italy, Valuation: Current prices, Adjustment: Raw data

Criteria

Pivoting

Reference Metadata

Table

Chart

Primary dimension

Time

11 values selected

Aggregate

Gross savings (*)

Gener

40.000

20.000

0

-20.000

-40.000

-60.000

-80.000

2014 2015 2016 2017 2018 2019 2021

AI Assistant

Hi, this is the chatbot assistant. Tell me what you want to visualize about this information, I am here to further refine your research

Show me the chart Change chart size and filters

The AI Assistant is an AI system. By accessing the service, users agree to the following [terms of Use](#)

Show me a line chart



Conclusions

- ❑ The toolkit hides much of the complexity of the SDMX standard, providing an intuitive environment where users can work through visual interfaces, guided configurations, and pre-built components without needing to master the SDMX technical specifications. This dramatically lowers the entry barrier, especially for institutions with limited SDMX expertise or IT support
- ❑ The new strategy embraces emerging capabilities in data engineering, data architecture, and data analysis. By aligning with these disciplines, the toolkit supports now more robust data pipelines, clearer metadata governance, and the ability to design interoperable, scalable infrastructures
- ❑ The integration of AI technologies enables data users to search and customize dataset visualizations while interacting with a “human-like” virtual expert assistant

Thanks

- ❑ SDMX Istat toolkit download: <https://sdmxistattoolkit.github.io/index.html>
- ❑ Corporate dissemination data warehouse (IstatData): <https://esploradati.istat.it/databrowser/#/en>
- ❑ Permanent census of population and housing: <https://esploradati.istat.it/databrowser/#/en/censpop>
- ❑ Agriculture Census 2020: <https://esploradati.istat.it/databrowser/#/en/censimentoagricoltura>
- ❑ External trade dissemination system (CoeWeb): <https://esploradati.istat.it/coeweb/databrowser/#/en>

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