

The BIS Data Portal project
Delivering the next generation platform for BIS statistics

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Agenda

- Statistical Dissemination at the BIS
 - Current product offering
 - Achievements / Issues / risks
- Introducing the BIS Data Portal
 - Key business requirements
 - Comparative analysis
- Delivering the BIS Data Portal
 - SDMX – the Swiss Army knife!
 - Addressing business requirements
 - Technology stack
 - Lessons learned
 - Project phases
 - Pilot / go-live

Statistical dissemination at the BIS today

Existing Dissemination Landscape

- Public Domain:
 - Statistics pages on bis.org site (Comm's)
 - Statistics Explorer (Comm's)
 - Statistical Data Warehouse (MED IT)
 - SDMX Rest API (MED IT)
- Extranet / Internal:
 - DBSonline (MED IT)

SDMX technical standards

The SDMX Technical Specification formally defines the

SDMX information model

Web services API

The web services application programming interface (API) for interacting with software systems implementing the SDMX

The BIS SDMX API web service offers programmatic access to the data. The related open [API documentation](#) describes



Project SDMX/FMR 05 May 2022

The FMR enables organisations to 'get a grip of their metadata', by externalising their statistical structural metadata with the benefits of maintainability, re-use, standardisation, harmonisation and improved metadata and data governance.

Search Series eg sweden AND gdp AND (EUR OR SEI)

Countries

- ☐ Non-shareholders countries
- ☐ OSSP countries
- ☐ Advanced industrial economies (major)
- ☐ Emerging market economies (major)
- ☐ G-10
- ☐ G-20
- ☐ OECD (35)
- ☐ Euro area (19)
- ☐ European Union (28)
- ☐ BIS shareholder countries (60)
- ☐ Basel Committee on Banking Supervision (27)
- ☐ Committee on the Global Financial System (23)
- ☐ Committee on Payments and Market Infrastructures (24)
- ☐ All Countries
- ☐ Commodities

Filters

Frequency

- ☐ Daily [D]
- ☐ Weekly [W]
- ☐ Monthly [M]
- ☐ Quarterly [Q]
- ☐ Half-yearly [H]
- ☐ Annually [A]

Status

- ☐ Current
- ☐ Archived
- ☐ Discarded

Categories

- ☐ Credit and money
- ☐ Long series on credit
- ☐ Monetary aggregates

Series last update 2022 May 10

Reporting delay Daily

Frequency A

Full code BIS,MACRO,DHBAAPL1

BIS economic phenomenon BIS,MACRO,DHBAAPL1

Data set last update 2022-05-10 14:15:06:07

Data provider BIS - Services Updateable by BIS DATAMARK

Hyperlink <http://bisonline.bis.org/bsonline/#?code=BIS,MACRO,DHBAAPL1>

Category path 1: Interest rates and bond yields / Interest rates / Long policy rates

Data preview

- ☐ Bloom
- ☐ BIS [E]
- ☐ Central bank
- ☐ Data
- ☐ Coverage
- ☐ IAG [I]
- ☐ Other

Documentation ☐ Unit ☐ Values

BIS documentation date 2020 Jun 16

Original source Bank of Japan

Methodology reference <http://www.bis.org/statistics/bsl/bsl10001.pdf>

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Summary of locational statistics, by currency, instrument and residence and sector of counterparty
Outstanding at end-December 2021, in billions of US dollars

	All sectors		Bank sector				Non-bank sector	
			Total		Of which: Intragroup		Total	Of which: Non-bank financial
Level: 1 2 3 4	Claims	Liabilities	Claims	Liabilities	Claims	Liabilities	Claims	Liabilities
<input checked="" type="checkbox"/> Cross-border positions	35,074.5	31,646.3	16,817.8	15,770.6	10,727.8	9,730.0	16,811.5	11,044.7
<input checked="" type="checkbox"/> By residence of counterparty								
<input checked="" type="checkbox"/> Developed countries	24,798.2	20,333.6	12,560.4	11,003.6	7,710.4	7,136.9	11,054.6	6,498.5
Of which: euro area	9,098.9	7,925.9	4,825.0	4,328.1	2,655.7	2,575.4	3,879.4	2,294.1

BIS Statistics Warehouse

International banking **Debt securities** **Derivatives** **Global liquidity** **Total credit** **Credit gaps** **Debt service ratio** **Property prices** **Consumer prices** **Exchange rates** **Policy rates**

Data-set BIS locational banking **Query** German banks in all reporting countries, Cross-border claims and liabilities **Create Custom Query**

Filters

☐ Expand the filters view to show full query details

Result Window ☒ Display full screen

Dataset: Locational Banking Statistics - disseminated data **Type of instruments:** All instruments

Subject: BIS locational banking **Currency denomination:** All currencies

Frequency: Quarterly **Currency type of reporting country:** All currencies (a=D+F+U)

Parent country: Germany **Type of reporting institutions:** All reporting banks/institutions (domestic, foreign, cross-border)

Reporting country: All reporting countries

Counterparty country: All countries (total)

Position type: Cross-border

Balance sheet position **Total claims** **Total liabilities**

Counterparty sector

Measure **TIME PERIOD**

Amounts outstanding 2020-Q3

About global liquidity indicators

The BIS uses the term "global liquidity" to refer to the ease of financing in global markets. The key indicators of global liquidity and the focus of the global liquidity indicator constitute part of the BIS's support for the G20's activities.

Analysis

[Commentary: data at end-December 2021](#)

Research

[Introduction to BIS statistics](#)

Metadata

[Methodology](#)

Existing Dissemination Offering – Achievements / Issues / Risks

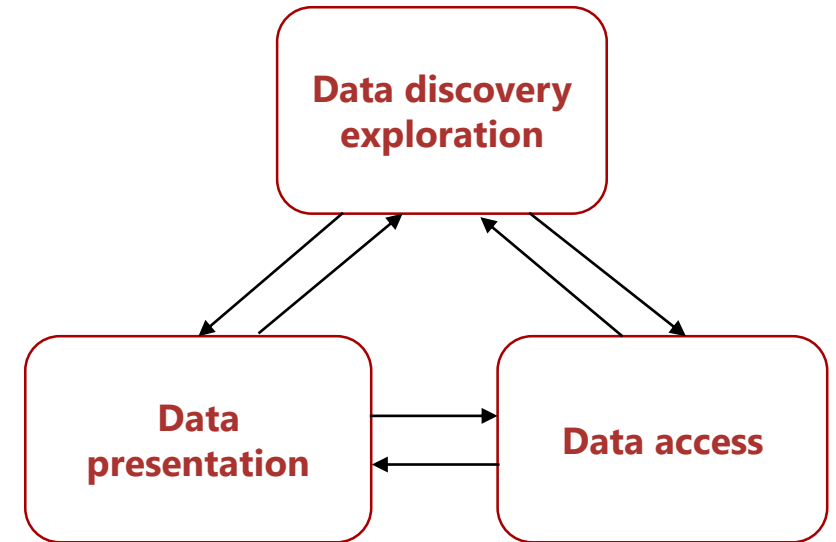
- Heterogeneous IT landscape
 - Allowing us to develop targeted applications for specific audiences / data types
 - *But has led to:*
 - *Inconsistent UX / UI*
 - *Differing technologies used across applications*
 - *Ownership across multiple teams / resource constraints*
- Many products/features added over time
 - Showing our agility to respond quickly to user needs, for example in times of crisis
 - *But has led to:*
 - *Difficulty for users to get 'holistic' view on the BIS offering*
 - *Increasing complexity & decreasing UX*
- Changing user behaviors
 - BIS statistical products continue to have high levels of user satisfaction and brand recognition
 - *But recognize that BIS customers have differing expectations and business needs depending on their expertise*

BIS Data Portal

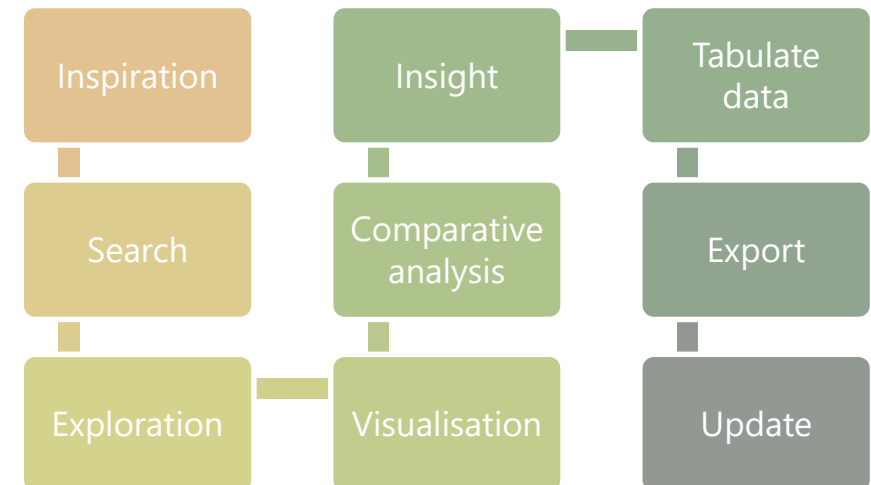
'One-stop shop for BIS data'

Key business requirements

- **Strong linkages** among different components
 - Data discovery/exploration, presentation, access
- Provide **user journeys** for different personas
 - Economists, Statisticians, Journalists, Gen Public
 - Basic & advanced users
- “Actively” answer questions users might have to provide quick **economic insights**, eg,
 - What is topical?
 - What are the keywords to search?
 - What is the key measure?
 - What are related data?



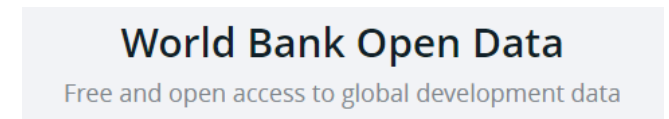
Key elements of data portal



A typical user journey of an economist

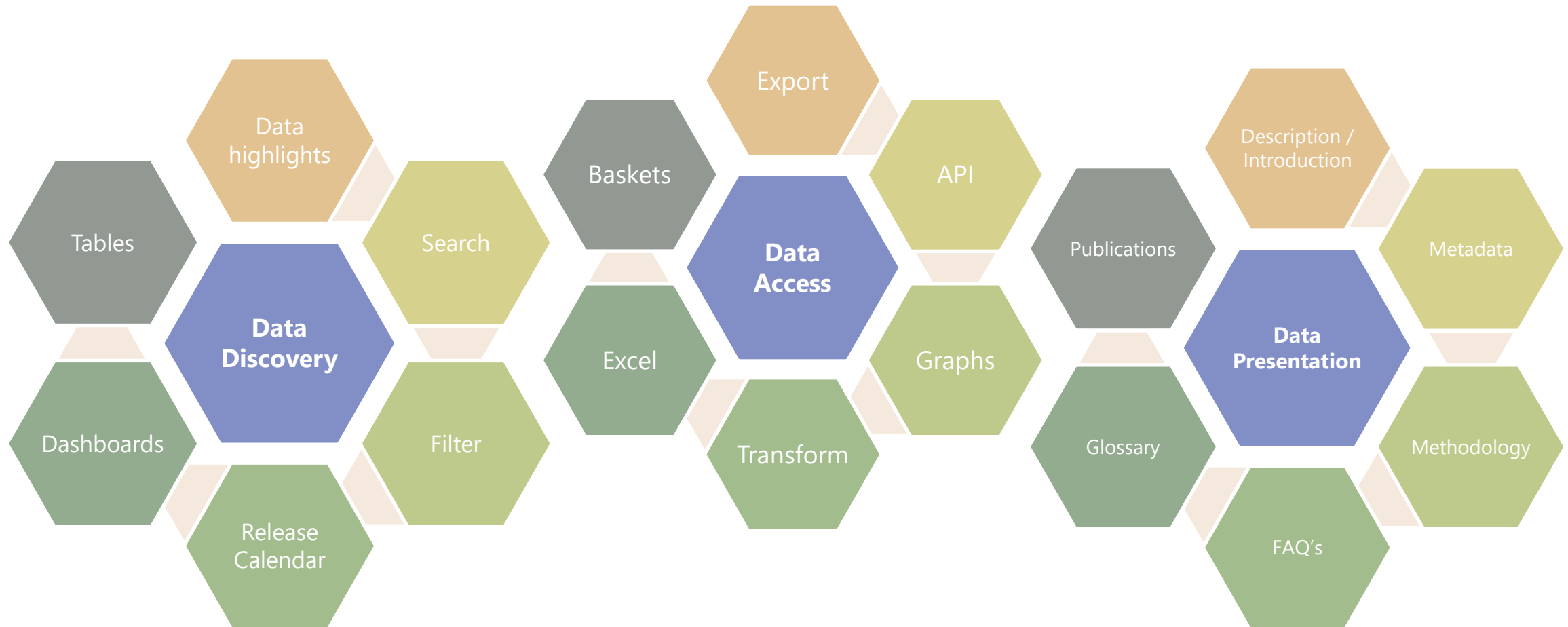
What do others offer in this space?

- The project team have reviewed and consulted with a number of international institutions
 - OECD / SIS-CC .Stat Suite
 - ECB
 - FRED
 - Eurostat
 - IMF
 - World Bank
 - Central Banks
- Plan to hold information / usability testing sessions with the IO's & CB's once we have an 'Alpha' version ready for review



Delivery

How do we break down business requirements into IT tasks?



SDMX – the Swiss Army knife!

- SDMX is the technical backbone of the Data Portal project
 - Allows the modelling and linking of data and metadata for a statistical domain
 - SDMX registry serves as a central store for all Data Portal functions
- The Data Portal employs a wide range of SDMX artifacts
 - Structural Metadata
 - DSD, dataflow, codelist, etc.
 - Category schemes, hierarchical codelist, mappings, etc
 - Metadata Reports
 - Describing the differing statistical domains, data highlights, etc
- Fusion Metadata Registry (FMR)
 - Benefiting from the investments made in the Fusion / FMR product suite
 - [SDMX/FMR: A reference SDMX Registry implementation \(bis.org\)](https://bis.org/sdmx/fmr)



Delivering key business requirements

- Statistical Topic pages
 - Entry point to the statistical domain
 - Provide direct access to metadata, methodology, publications, faq's
 - Information is sourced from SDMX metadata reports
- Dashboards
 - Provide users with an at-a-glance view of the statistical domain
 - Highlight key trends in the data
 - Development of a Tableau Web Data Connector for SDMX REST API's
 - Leverage the bank's investment in Tableau

Delivering key business requirements

- Tabular view on the BIS statistical collections
 - Tables developed by BIS subject matter experts
 - Data Portal introduces a new concept "Publication Table" to the SDMX registry

"A Publication Table is a curated table of data, where the values in the table rows, columns and table body cells can be individually specified...enables a single table to pull data from multiple sources and piece the data together in a way which is not possible when dealing with standard cubes of data."

- AG-Grid provides a flexible data grid implementation
- *(BIS Statistics Bulletin replaced with the Statistics Explorer product in 2019)*

Delivering key business requirements

- Time series search / exploration / view
 - Search is powered by Apache Solr
 - “Popular, blazing-fast, open source enterprise search platform”
 - Why Apache Solr?
 - BIS have invested in Cloudera Data Platform
 - Cloudera Search is driven by Solr
 - Sparklines / time series graphics are built using Plotly
- Technology independent data export
 - Export to common formats, CSV, Excel
 - Bulk data downloads
 - SDMX REST API
 - [BIS Stats API](https://stats.bis.org/api-doc/v1/) / <https://stats.bis.org/api-doc/v1/>
 - Code examples will be published on GitHub

What technology stack will we deploy?

- Containerized application running on OpenShift Container Platform / Kubernetes (K8s)
 - Automated deployments, horizontal scaling, load balancing, orchestration, etc.
- Data Portal Pods
 - Fusion Enterprise Edition / Edge Nodes
 - Apache Solr
 - Python FastAPI
 - React JS
 - (MEDIT React Framework Library)
 - Redis
- Leveraging existing product API's
 - Bis.org
 - Tableau

What have we learned so far?

- Our goal is to 'reduce complexity & increase clarity' in the user journey
- Agile development practices are key to delivery
 - SCRUM offers opportunities for review & prioritization
 - Clear communication channels
 - Business engagement in the process
 - Focused discussion on requirements
 - Accept we may not know all the answers up-front / need to prototype
- SDMX works for statistical dissemination
- 'Search' is difficult!
 - Search relevancy is a mix of science and art
- Learn from others

How will we deliver the Data Portal?

- (Phase 1) Current focus is on the public BIS Data Portal offering:
 - Data Flows (26) across the following statistical domains:
 - International banking and financial statistics
 - Macroeconomic statistics
 - Payments and market infrastructures statistics
 - Public domain → ~800k time series published
- (Phase 2) DBSonline replacement (Extranet / Internal offering):
 - User identification / authentication
 - Data visibility dependent on user profile

When do we go-live?

- The BIS Data Portal will go-live in Q2 2023
- Prior to launch we will pilot the solution
 - Opportunity for the team to gather user feedback on the different application components
 - We would welcome your input!
 - If you are interested in participating in the pilot please reach out to me directly

Thank you