THE BELFIUS DATA STRATEGY

Wouter Boussemaere, Pieter Segaert
IT Enterprise & Technology Architects
Belfius Bank & Insurance
16.06.2021

Schedule

Belfius, meaningful & inspiring for the Belgian Society. Together

The Belfius Group: a unique and Belgian Bank - Insurer

Belfius is an integrated bank-insurer, currently owned by the Belgian federal state through the Federal Holding and Investment Company (FPIM – SFPI). Belfius Bank operates as the mother company, with Belfius Insurance and various other companies as (fully owned) subsidiaries.

> 3.6 million customers

590 branches

9,400 employees

55 million monthly digital interactions

DE BELFIUS-APP N°1 VAN DE WERELD

BELGISCH TALENT = WERELDTALENT

Uw Belfius-app, de beste bankapp van de universele grootbanken wereldwijd.

Zoom on Belfius Insurance

Belfius Insurance is major player in the Belgian industry market: 1 insurer, 3 brands, solution catered to the entire Belgian Market.

Belfius Insurance

- One stop partner for all matters relating to banking and insurance with all synergies in between.
- An insurance partner for cities and communities.
- Leverages on the Belfius mobile app.
- Strong digital experience with both underwriting and the claims process integrated into the app.

DVV verzekeringen

- Over 90 years of experience.
- Strong local embedding with over 300 offices. (often family business)
- Phygital strategy.
- Wide range of products with both life and non-life offerings.
- Over 350.000 families insured with DVV.

Corona Direct Verzekeringen Assurances

- Became subsidiary of DVV insurance in 1997.
- Direct insurer: no-one in between insurance company and the customer.
- Offers the most common non-life insurance.
- Unique offerings with "kilometer insurance" for cars and "volume insurance" for owners.

Where are we (Wouter & Pieter) located in the Belfius Group

IT Belfius Bank

IT Belfius Insurance

IT Transversal services

Infrastructure & Cloud

Vendor Mgt

Architecture

Digital Security

Wouter Boussemaere joined Belfius 5 years ago, where he leads the Enterprise Data & Integration team. He has more than 20 years of experience as enterprise architect at various different companies. His expertise lies in the enterprise data architecture domain and with his team he is responsible for the overall enterprise data architecture and corporate data platform design at Belfius Bank & Insurance.

Pieter Segaert joined Belfius 3 years ago after obtaining a doctoral degree in mathematics and data science. After gaining experience at Belfius Insurance supporting and transforming operations, he joined the Enterprise Architecture team in the summer of 2020. His main focus evolves around the domain of analytics, data science and AI in the broad sense.

Belfius, meaningful & inspiring for the Belgian Society. Together

Digital leadership, striving to human-digital excellence

Constant focus on customer satisfaction and trust

Reinvent banking & insurance: personalized advice, meaningful & inspiring insights

Safety, privacy, trust by design

Efficient processes: STP first, data supported, AI enabled

The Belfius strategy translated into ambitions for Belfius Data

Switch from batch-based data operations to real-time data integrations

Enable processing of new types of data

Harmonize tooling and way of working in the group such skills may be used transversally and specialization is possible

All data exposed to consumers is governed and secured via the corporate data model.

E2E stacks for reporting, AI analytics and decisioning, putting business in the driver's seat

Safety, privacy and trust, a cornerstone of the Corporate Data Platform design

Our commitment: customer satisfaction and trust comes first. Always.

Security of our customer data.
Our first concern

Respecting our customers privacy

Respecting the regulatory context

Protecting customers personal data

Diving one step deeper

**Security of our customer data.
Our first concern**

Respecting the regulatory context

- Belfius as bank-insurer has to comply with several Belgian and European directives including e.g.
  - Directives from the Belgian and European National Bank on operational business continuity and security of systemically important financial institutions
  - Specific reporting legislation such as Solvency II, IFRS17
  - Specific legislation and directives on e.g. AML models

- European GDPR legislation: Schrems II throws an extra curve ball when bringing data to the cloud
- European AI framework guidelines (similar trajectory to GDPR)

The Corporate Data Platform, a rationalization for the future new target
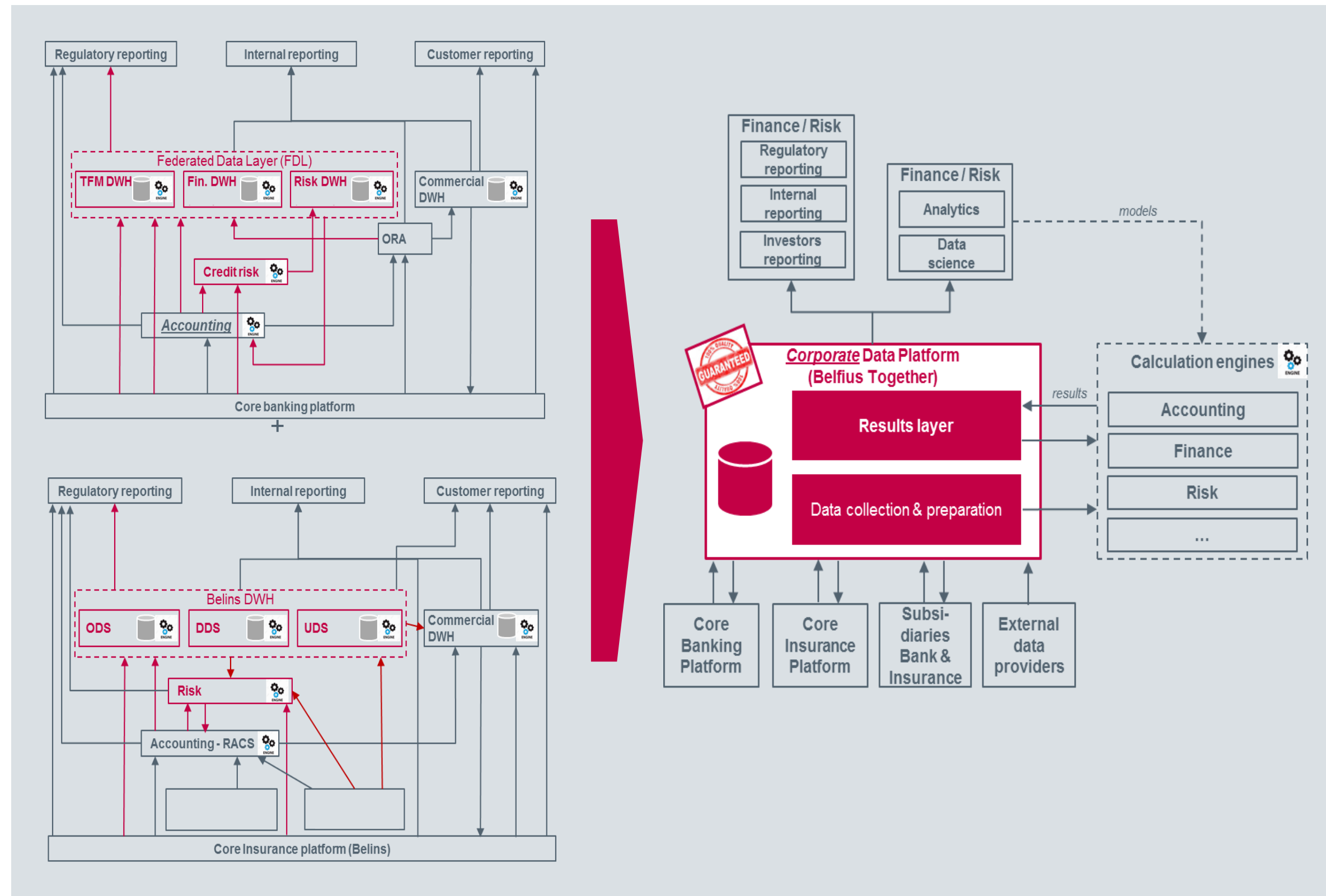
The Corporate Data Platform, a rationalization for the future new target
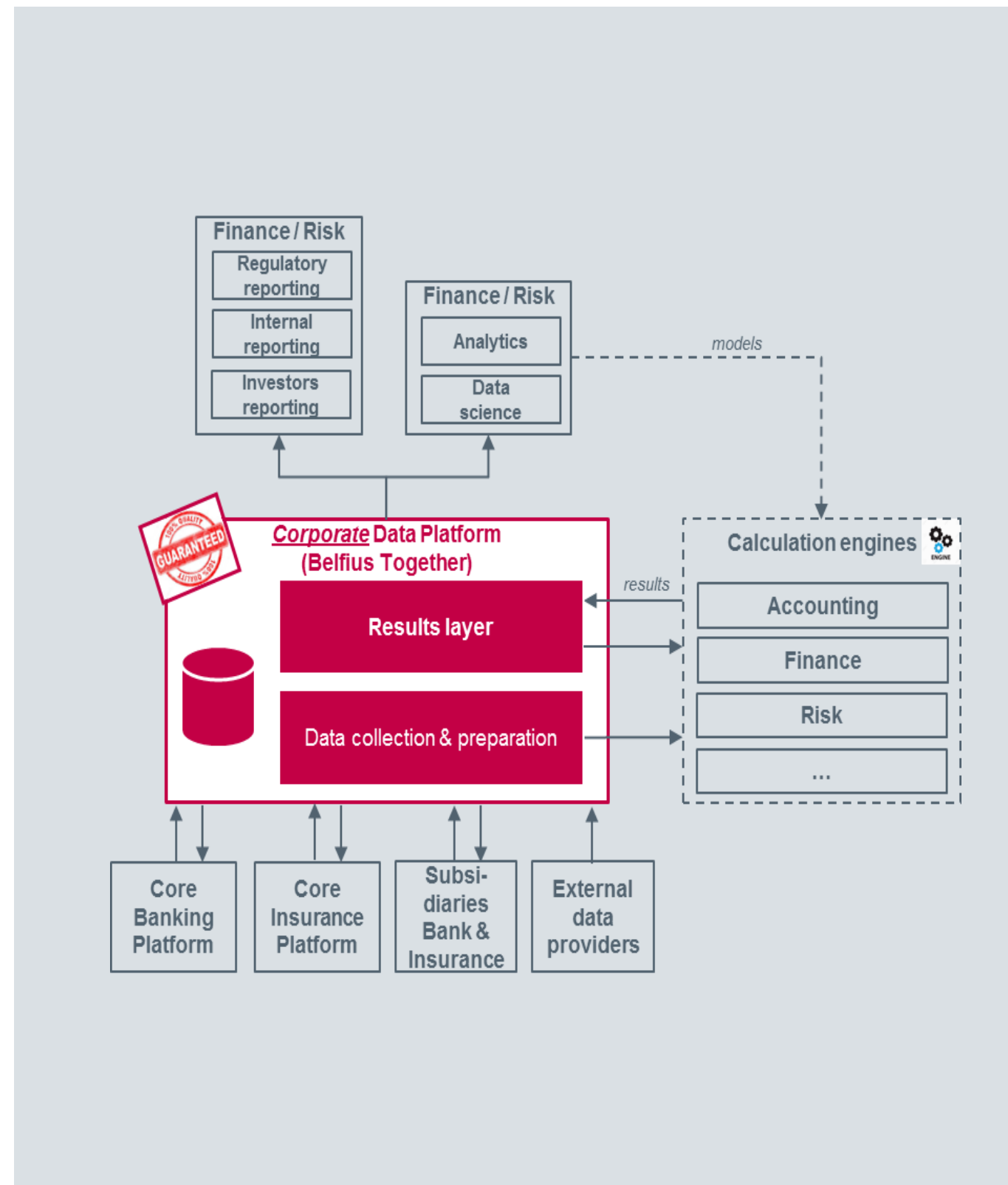
Evolution to the Corporate Data Platform

- One Corporate data platform instead of multiple fragmented DWHs (to avoid data redundancy and inconsistencies)

- Focussing on real-time integration and analytical processing generating insights in operational processes (fraud analytics, dynamic pricing, customer Next Best Action....)

- Multiple "plug-in" calculation engines from multiple owners. Business owns the data and the analytical models, IT manages the platforms.

- "The only source for data" is the Corporate Data platform

- Critical EUC reporting and calculation engines will be transferred to IT and plugged on the CDP

The Corporate Data Platform consists of 3 key areas on an IAM-bedrock and with transversal data functions on top

Transversal data functions

**Data
Storage**

**Data
Exposure**

**Data
Consumption**

Identity and Access Management
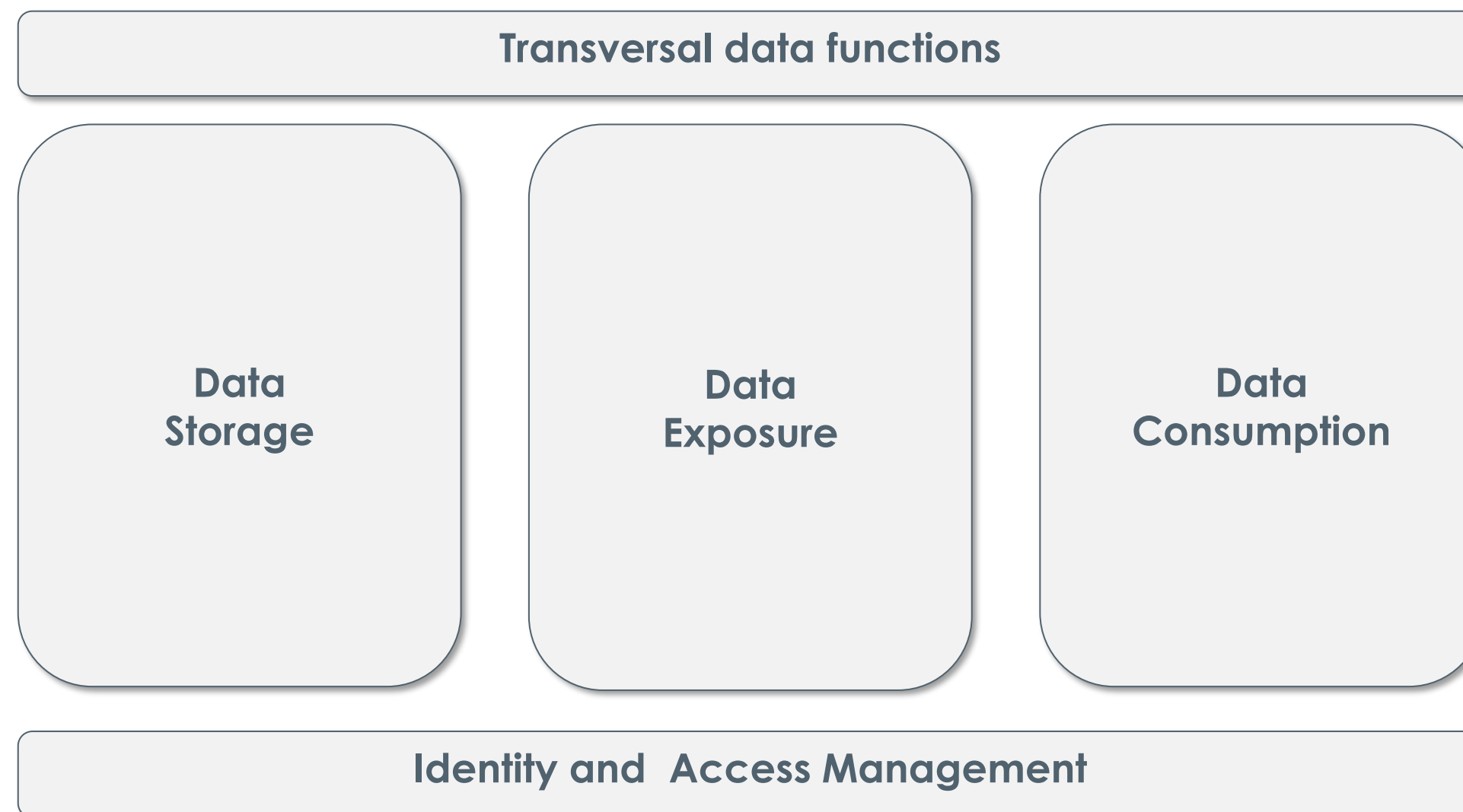
Data exposure layer is key to decouple storage and consumption areas. It allows both storage and consumption to evolve at its own pace, facilitating the Belfius cloud ambitions.

The Data exposure layer is also where IAM is enforced and full data governance is applied

The data eco-system is very large and spans a myriad of areas, each with its owns challenges

Transversal data functions

- Compliance & Auditing
- Data Governance
- Data Retention

Data Storage
- Personal
- Ingestion
- Analytical storage
- Operational Data Hubs
- Application storage
- Data Streaming

Data Exposure
- Data Virtualisation

Data Consumption
- Operational Data Integration
- Data Indexing & Search
- Reporting Dashboarding
- Published BI
- Data Exploration Data Visualization
- Personal BI
- Decision Engine
- Calculation Engine
- Model

BI Lifecycle
- Development
- Deployment

Model Lifecycle
- Development
- Testing
- Versioning
- Deployment
- Monitoring

IAM

Data exposure decouples consumers from data storage. The technology used to achieve this is data virtualisation.

Current main focus on
- Data virtualisation
- IAM
- Data governance
- The BI and model lifecycles

- Shaping the platform in the cloud

A high-level view of some of the major tools in our data platform
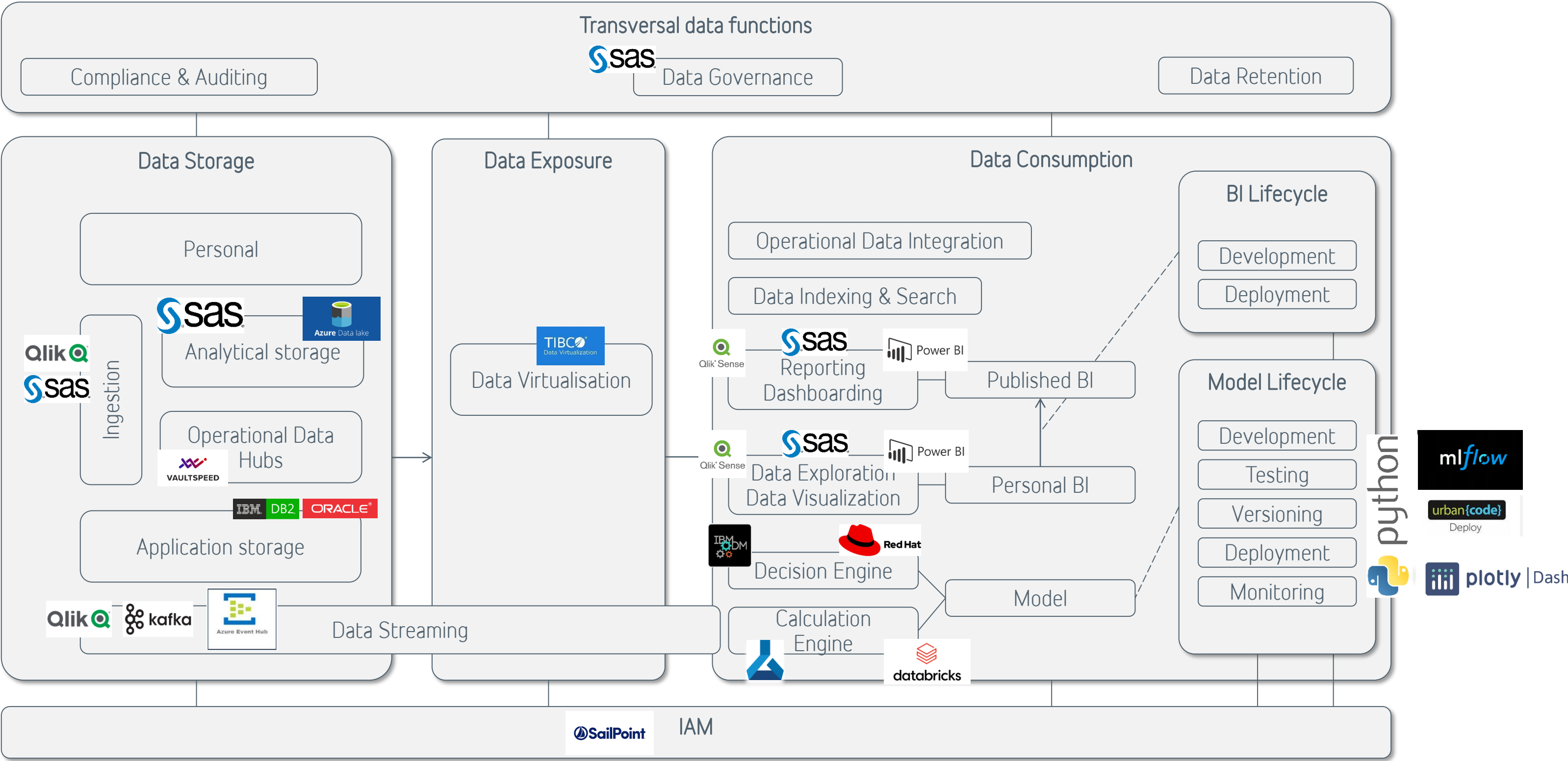
Qlik Replicate is a key element and is our main ingestion tooling

Belfius selected Qlik Replicate (formerly Attunity) as a partner in 2018.

Feeding the Belfius Insurance DWH

- Replication of source OLTP (db2 and SQL-servers) towards db2 staging.

- Almost all operational database tables are replicated

- Realized in two months

Feeding the Belfius Bank datahubs

- Replication of source OLTP (db2 and Oracle) towards Oracle

- Replication delay time averaging 1.14 seconds during business hours (8-20h) with 99,65% of time below 5 seconds

New use cases are planned

- Feed of data vault-automation

- Feed of Azure based data storage

- Good collaboration with Qlik and Microsoft to help solve our challenges! Qlik already implemented several new ideations from Belfius

A high-level view on the concept of Data Virtualization

Consumers

Enterprise Applications, ESB

Reporting, BI, Portals

Mobile, Web, Users

Data Virtualization

Publish	Real-time Data Services
Combine	Transform, Quality, Integrate
Connect	Normalized Views of Disparate data

Connector library   Automation jobs   Any Data or Content   Read and Write

Sources

Databases & Warehouses

Enterprise Applications

Cloud / SaaS Applications

XML, Excel, Flat files

Internet, Extranet

Web 2.0, Social Media

PDF, Docs, Index, e-mails

Some key characteristics

- Easy access to all data
- Virtual data layer
- Minimization of data replication
- Optimization of performance
- Real-time (Right-time)
- Data services reuse
- Lighter, flexible integration
- Integrates with existing tools

TIBCO®

Product of choice at Belfius
Tibco Data Virtualization

Similar to traditional warehousing, data virtualization is a layered approach

Customer 360

Customer Info

Application/User Layer

Party — Address

CDM Layer

Actor — Address

Source Connectivity Layer

core

Tibco Data Virtualisation
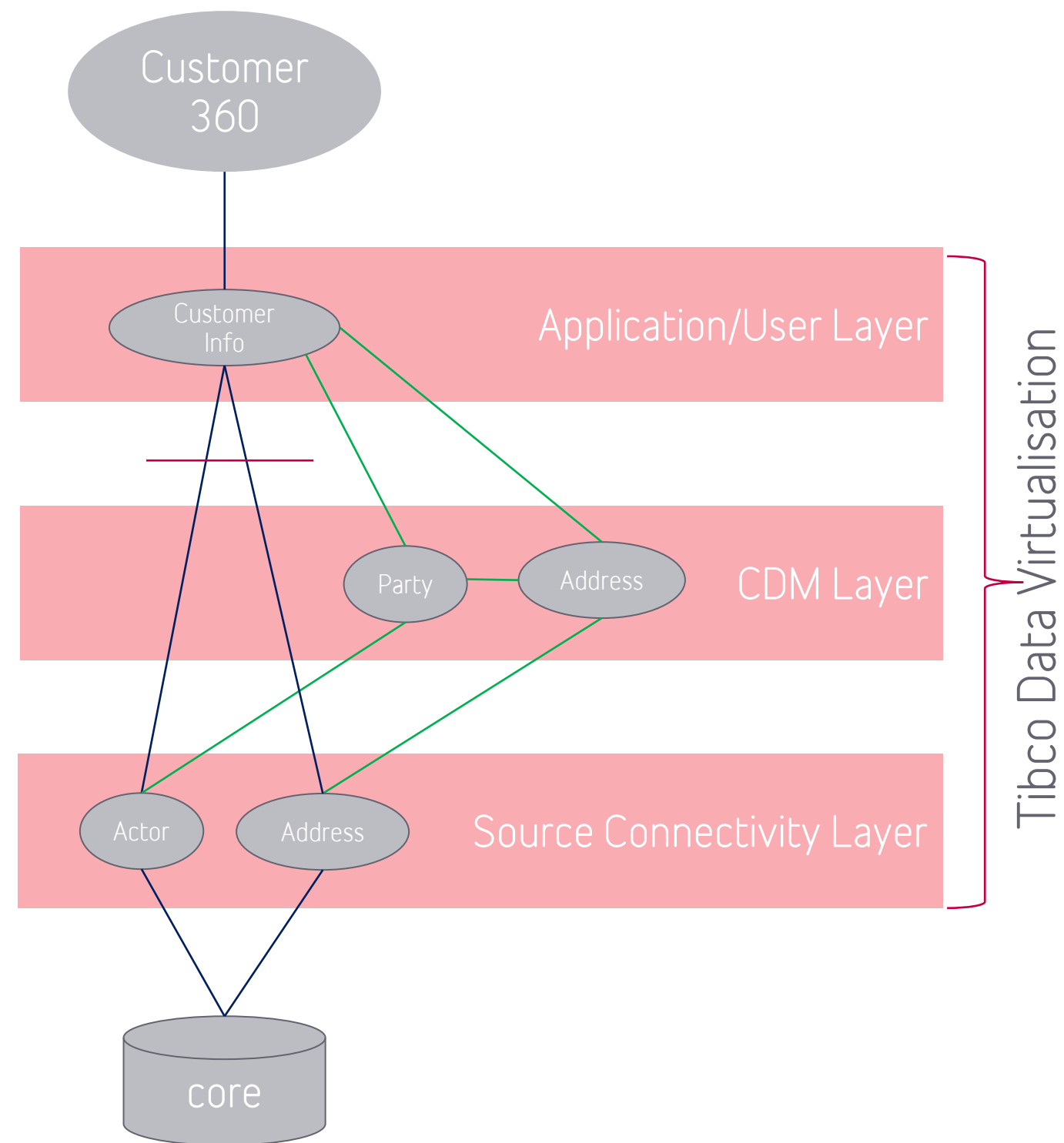
Designing the virtual layer requires careful thought as we are placing the Belfius business semantic in our Corporate Data Model on top of operational data stores

- Connectivity layer

  Data Virtualization allows to read and combine data from a whole myriad of sources: files, Oracle databases, mainframe DB2,....

- Corporate Data Model layer

  The data as represented in the sources is not always in line with business semantics and this addition of semantics and meaning (with clear definitions) is done in the CDM layer effectively translating/transforming the data from the source systems.

- Application / User layer

  The model might be too complex and hard to consume without a thorough understanding of the business and/or data model. Therefore, an application/user specific (mostly aggregated) view on the CDM may be created using CDM terminology so that a less advanced consumer can also benefit.

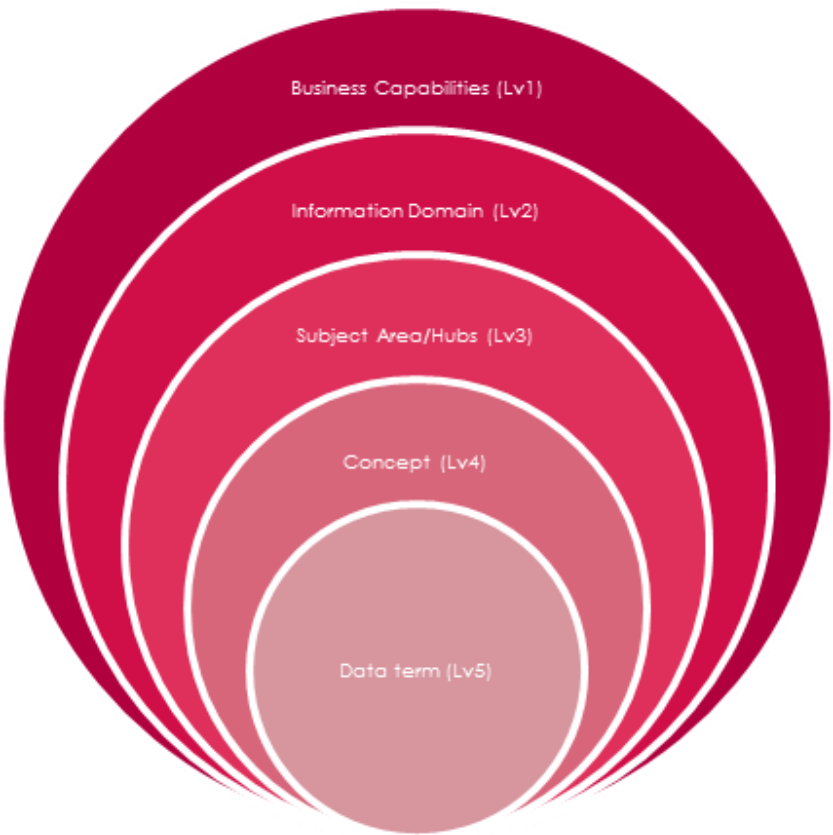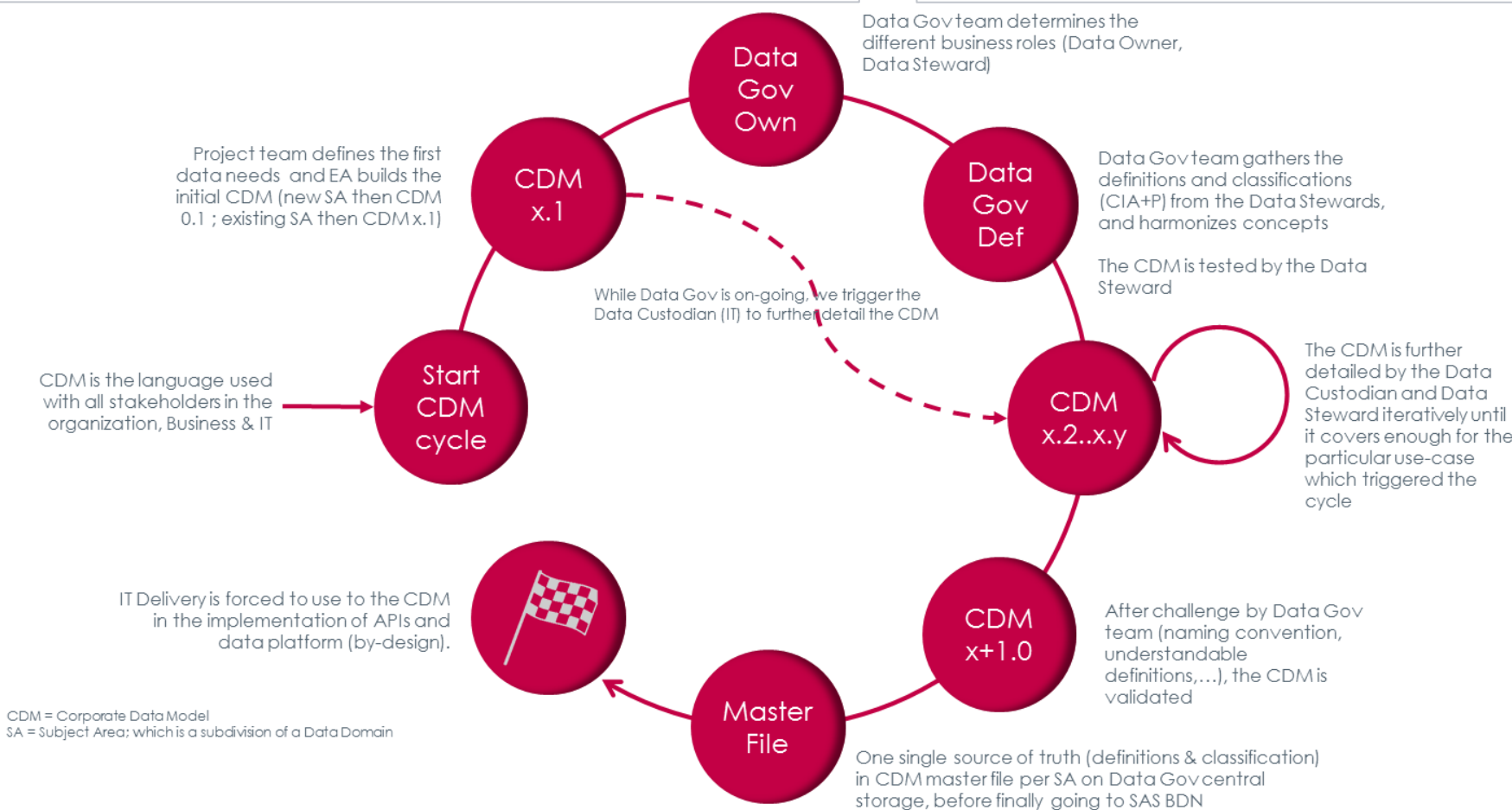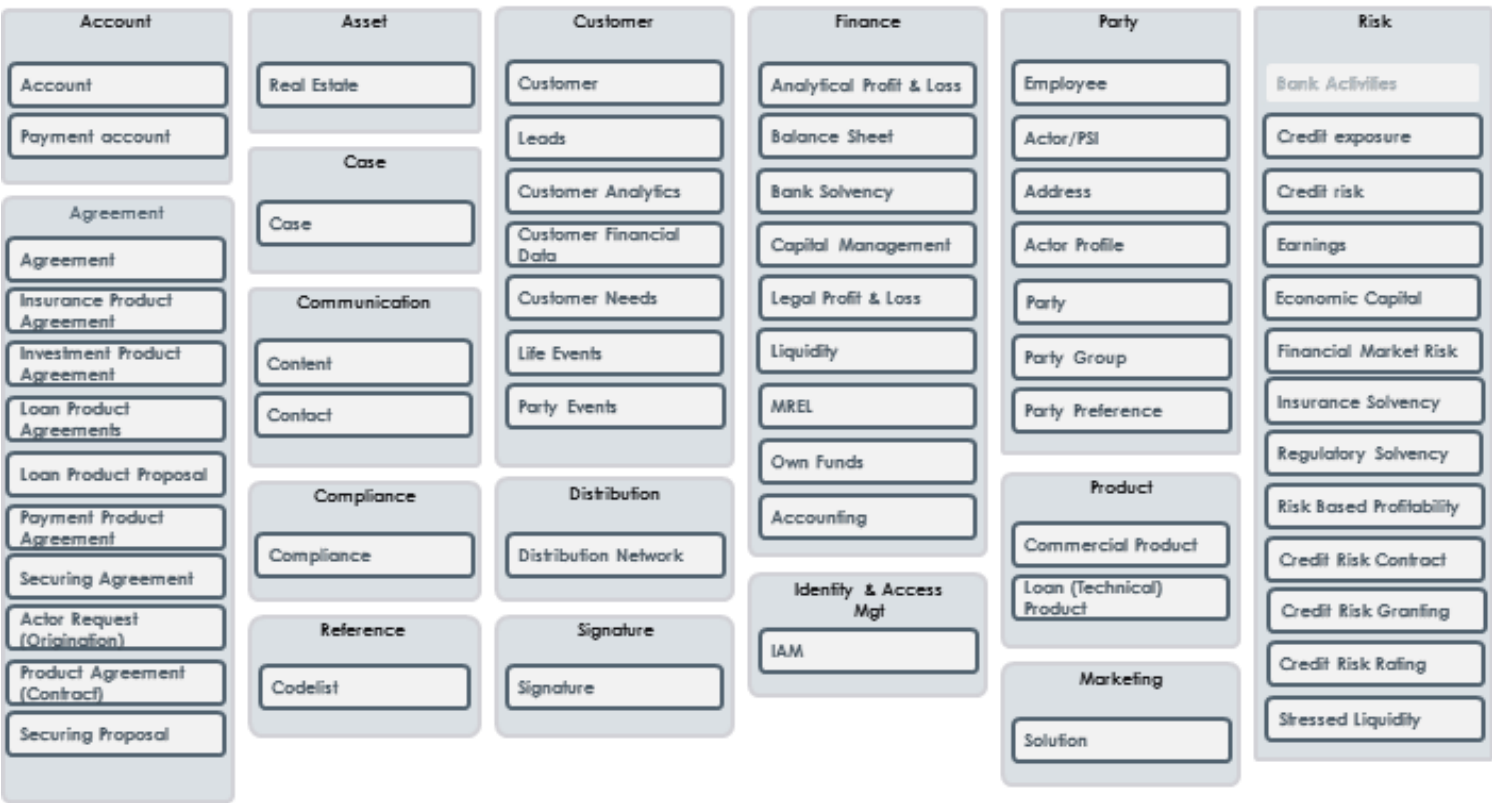# The corporate data model, a Belfius tailor-made Esperanto, is supporting the data governance and the API integration strategy

Before

❑ No corporate data model

❑ Silo-based management of data (incl. potential different interpretation of replicated data)

❑ Only physical data models existed which were required to manipulate the actual data models in the data bases

Now / Near future

✓ One corporate data model following a data governance process and classification

✓ 1 common language

✓ 1 definition per term

✓ clear ownership & stewardship

✓ Across business lines / aligned to the business capabilities and not the applications anymore

✓ Used as canonical language ("Belfius esperanto") in our API definitions to avoid point-to-point integrations

Account	Asset	Customer	Finance	Party	Risk
Account	Real Estate	Customer	Analytical Profit & Loss	Employee	Bank Activities
Payment account		Leads	Balance Sheet	Actor/PSI	Credit exposure
	Case	Customer Analytics	Bank Solvency	Address	Credit risk
Agreement	Case	Customer Financial Data	Capital Management	Actor Profile	Earnings
Agreement		Customer Needs	Legal Profit & Loss	Party	Economic Capital
Insurance Product Agreement	Communication	Life Events	Liquidity	Party Group	Financial Market Risk
Investment Product Agreement	Content	Party Events	MREL	Party Preference	Insurance Solvency
Loan Product Agreements	Contact		Own Funds		Regulatory Solvency
Loan Product Proposal		Distribution	Accounting	Product	Risk Based Profitability
Payment Product Agreement	Compliance	Distribution Network		Commercial Product	Credit Risk Contract
Securing Agreement	Compliance		Identity & Access Mgt	Loan (Technical) Product	Credit Risk Granting
Actor Request (Origination)	Reference	Signature	IAM		Credit Risk Rating
Product Agreement (Contract)	Codelist	Signature		Marketing	Stressed Liquidity
Securing Proposal				Solution	

Project team defines the first data needs and EA builds the initial CDM (new SA then CDM 0.1 ; existing SA then CDM x.1)

Data Gov team determines the different business roles (Data Owner, Data Steward)

Data Gov team gathers the definitions and classifications (CIA+P) from the Data Stewards, and harmonizes concepts

The CDM is tested by the Data Steward

While Data Gov is on-going, we trigger the Data Custodian (IT) to further detail the CDM

The CDM is further detailed by the Data Custodian and Data Steward iteratively until it covers enough for the particular use-case which triggered the cycle

CDM is the language used with all stakeholders in the organization, Business & IT

IT Delivery is forced to use to the CDM in the implementation of APIs and data platform (by-design).

After challenge by Data Gov team (naming convention, understandable definitions,…), the CDM is validated

One single source of truth (definitions & classification) in CDM master file per SA on Data Gov central storage, before finally going to SAS BDN

CDM = Corporate Data Model
SA = Subject Area: which is a subdivision of a Data Domain

Business Capabilities (Lv1)

Information Domain (Lv2)

Subject Area/Hubs (Lv3)

Concept (Lv4)

Data term (Lv5)

Some best practices

" It is like changing an oil tanker to a speed boot whilst making it run on solar energy and remaining operational with oil delivery to the client expected yesterday "

It is all about change management: people, minds and technologies

- Explaining the why and how of the entire eco-system takes continuous effort to increase adoption.
  You can't do this alone. Make sure to have a group of ambassadors to share the heavy lifting
- Create a Pathfinders team to lead the way. Many first-time (technical) issues will appear. Dedicate staff with a clear mandate and time to solve them.
- Start with items that bring business value
- Data touches everything, avoid changing all at once

We are happy to discuss with you!

Questions?