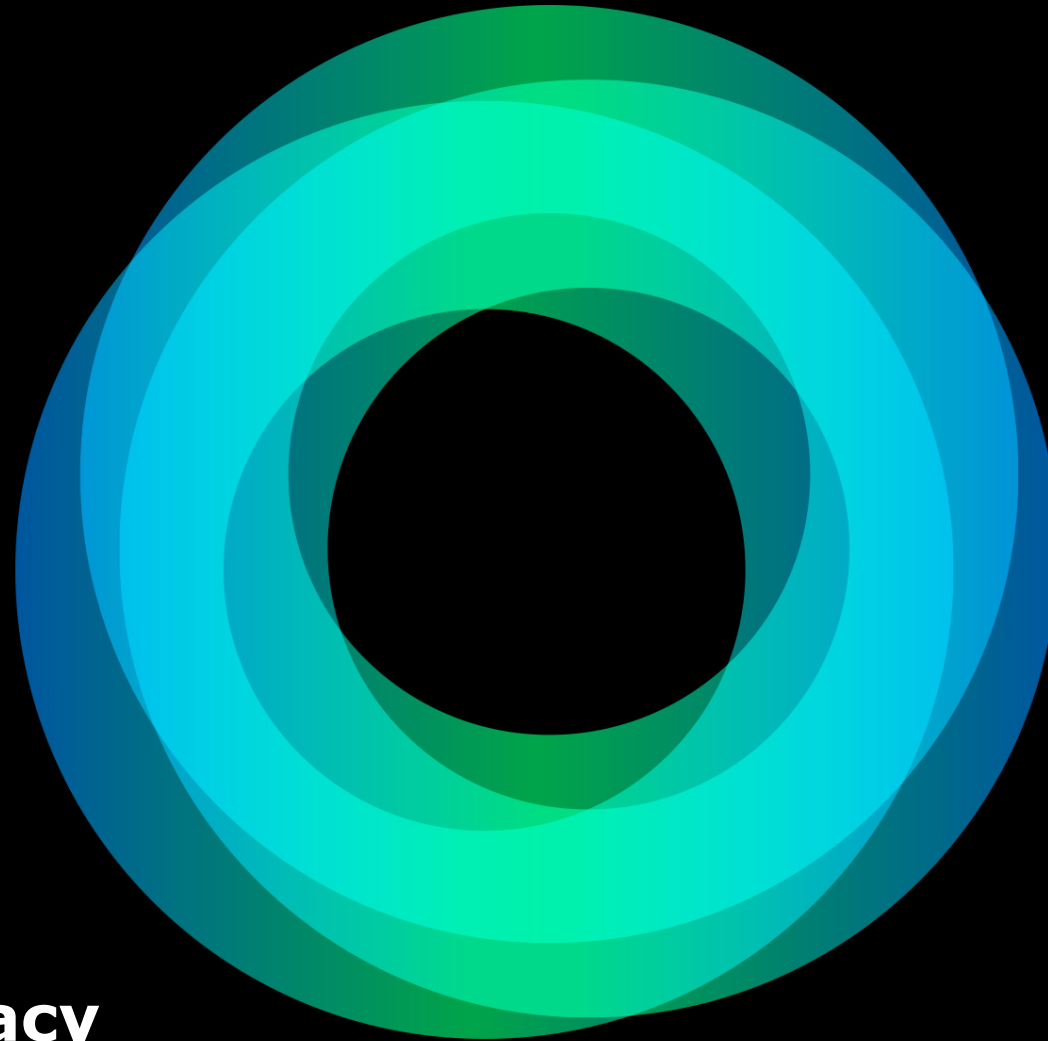


**Deloitte.**

Deloitte **Fluent**



**Software Solution  
for Capital Adequacy**

[www.deloitte.com/fluent](http://www.deloitte.com/fluent)

## Main challenges faced by financial institutions

01

**Complying with constantly changing and increasingly complex capital regulations** entails significant efforts and expenditures for financial institutions.

The regulatory compliance involves not only extensive regulatory reporting but also numerous ongoing and ad-hoc tasks (e.g. monitoring, stress-testing, QIS), which are initiated by European and local supervisory authorities.

02

**To optimize RWA and generate higher returns on capital**, institutions need to thoroughly understand own capital requirements and actively manage and plan capital allocation.

As a result, the detailed analysis of current capital requirements as well as stress-testing and what-if impact studies have become an indispensable part of compliance, risk management and financial planning processes.

03

**To address the needs and requirements, financial institutions need modern software solutions** which can effectively support the numerous regulatory and business-driven tasks.

A relationship with a professional advisor and a reliable solution provider should be established to guarantee that external and internal challenges are addressed adequately and immediately.

## Software Solution for Capital Adequacy

Deloitte offers a full scope of regulatory advisory and IT services, ensuring that your institution:

- stays fully compliant with CRD/CRR regulations (including all amendments) for credit risk, market risk, credit valuation adjustment, operational risk, large exposures, leverage ratio, own funds and ITS COREP regulatory reporting
- has thorough understanding of capital requirements, including main drivers, effective credit risk mitigation, capital allocation, etc.
- can effectively support regulatory and business driven what-if, sensitivity, stress-testing analyses as well as capital management and financial planning tasks



**Modern, enterprise-class software solution** which functional and technical design draws on our extensive experience in helping financial institutions address challenges of capital regulations and capital management.

Its architecture brings modern technologies to the software platform which have been successfully implemented in various analytical solutions for our clients from the banking sector.



**Team of experienced professionals** with an extensive regulatory, business, IT and PM skills, including expertise in the specifics of local markets and regulations.



More than 15 years of **experience in advisory and IT implementation** engagements, including delivery of proprietary and 3rd party software solutions for large financial institutions (about 10 million clients)



**Post-implementation support** in regulatory and IT matters, thereby ensuring readiness for future regulatory and business requirements.

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We provide an excellent solution and the highest quality of services

# Proposed Approach



*Project Phases*

**Gap Analysis**

**Proof of Concept**

**Software Implementation**

**Post-implementation Support**

*Goals*

Identify areas of noncompliance or partial compliance with regulatory requirements and areas for improvement (methodology, process, tools).

Conduct a proof-of-concept (PoC) of the target solution including major conclusions from the Gap Analysis phase.

Implement a solution for a single institution or the whole Capital Group (centralized or distributed).

Ensure that the solution runs smoothly in the production regime. Prepare the solution for new business requirements or regulatory changes.

Identify local options and specific needs or requirements for software customisations (e.g. built-in management and Pillar III reports, stress-test scenarios, etc.).

Take an informed GO/NO GO decision. Prepare a detailed plan for the Software Implementation phase.

*Key Tasks*

Review regulations and business processes related to capital requirements. Identify gaps, workarounds, simplifications, areas for improvements and specific needs or requirements.

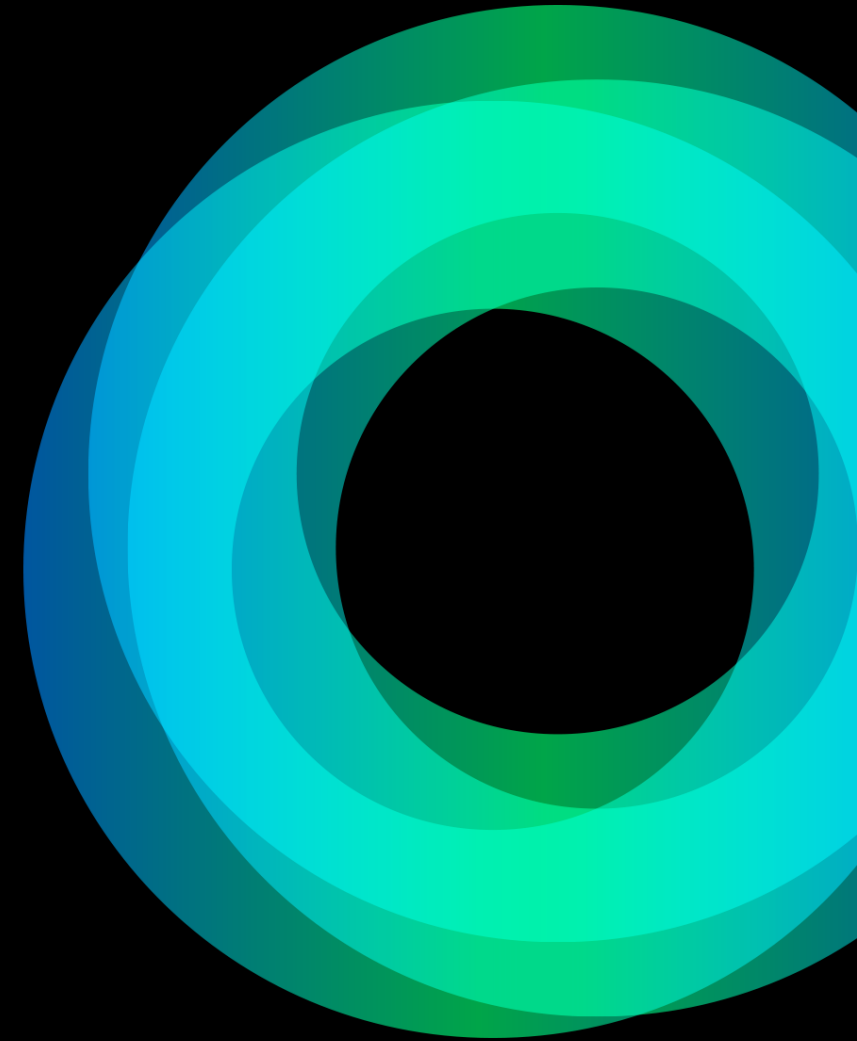
Agree on the scope of the PoC, prepare representative input data, deploy and configure test software, run calculations and generate reports; observe and measure system performance, identify specific areas with potential for additional improvements.

Deploy and configure the solution, integrate it with existing systems (data flows, user authentication, etc.). perform user acceptance tests; deliver trainings and support the roll-out to the production environment.

Provide support, deliver upgrades, address change requests.

# Deloitte **Fluent**

Key Features and  
Technical Characteristics



# Key Features

## Regulatory Compliance and Regulatory Reporting

### **Regulatory compliance, multi-bank and multi-regulator**

Extensive set of parameters to address all relevant regulatory requirements, including CRD/CRR, national options and regulatory reporting

- The parameters are easily accessible for review and editable in case of changes in the current or the introduction of new regulatory requirements
- Multiple variants of parameters may be defined to support requirements of distinct regulatory jurisdictions (e.g. institutions of a capital group located in different countries) or to differentiate approaches for calculations on an individual and consolidated basis
- Broad coverage of (a) calculation approaches, (b) types of exposures and credit risk mitigation techniques, and (c) cases requiring specific regulatory treatment (incl. prudential or parameter-based treatment of missing data)

### **Regulatory reporting (ITS COREP and Pillar III)**

User-defined static data and parameters as well as a comprehensive data model of capital requirements for Pillar I and Pillar III regulatory reporting

- User-defined supplementary data and parameters, which are not used in calculations, but are relevant for regulatory reporting
- Comprehensive data model covering transaction-level data for regulatory reporting purposes
- DPM-compliant data structures dedicated for ITS COREP reports generation
- Automatic ITS COREP report generation (XLS format and interactive viewing within the system)
- Easy integration with third-party regulatory reporting solutions
- Built-in Pillar 3 reports

### **Transparency, auditability and security**

Functional and architectural design ensuring full transparency, auditability and security of input data, parameters and calculation results

- Single repository of all input data, parameters and calculation results
- Automated and flexible data management, build-in rules to ensure data consistency
- Comprehensive and transparent data model allowing step-by-step tracing of results to understand and document the correctness of the calculation process
- Scalable and reliable data management platform and technologies
- Secure and role-based access control to eliminate operational risks and to stay compliant with applicable security procedures

# Key Features

## Technical Characteristics



### Very high performance

Modern system architecture and smart design resulting in very efficient calculations, even on large datasets and moderate hardware

- Calculations and reporting can be easily finished within the allowed timeframe
- Quick responses to internal or external requests to (re)run calculations and reports
- High performance of complex reports and computationally intensive stress-tests
- Efficient reporting spanning long series of monthly results to observe trends
- Low hardware and standard software requirements
- Scalable to handle very large data volumes, if needed



### Well-balanced solution

Optimal balance of functional scope, flexibility, ease of use, performance, hardware requirements and total cost of ownership

- Modern approach and holistic view of aspects essential for the capital adequacy of financial institutions
- Well-designed and customizable workflow to minimizing unnecessary complexity and operational risk of processes
- Integrated data management, calculation and reporting features to improve experience and productivity
- Easy adaptable and expandable to address specific regulatory and business needs
- Agile implementation approach, proven in many large scale engagements



### Technical details

Coherent set of state-of-the-art technologies, well-integrated components and easy technical administration

- Three-tier architecture with a web client
- Highly efficient in-memory, multi-threaded calculation engine
- Based on Microsoft technologies (.NET and SQL Server)
- Built-in reporting platform (Power BI and SQL Server Reporting Services)
- Integration with centralized or distributed data source systems, by means of data files or relational database connections
- Integration with domain services for an end-user single sign-on
- Role-based access control

# Key Features

## Supported Scope of CRDIV/CRR Capital Regulation

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### *Credit Risk Standardized Approach*

Evaluation of an exposure class and value, application of risk weights based on a credit quality step and a counterparty, default triggers and contagion, CRM eligibility, treatment of SME, infrastructure projects and exposures secured by mortgages

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### *Credit Risk IRB Approach*

Evaluation of an exposure class and value, assignment of risk parameters (PD, LGD, CCF), CRM eligibility, calculation of risk weights, calculation of EL, AIRB and FIRB, treatment of specialized lending, rollout plans and permanent exemptions from IRB Approach

---

### *Counterparty Credit Risk*

Evaluation of exposure value based on standardised approach (SA-CCR), simplified standardised approach and original exposure method, collateral impact, hedging sets, treatment of default fund contributions to CCP, support for CIU look-through approach

---

### *Market Risk*

Evaluation of positions in instruments for position risk, foreign-exchange risk and commodity risk, netting of asset and borrowing positions, support for duration and maturity-based approaches, correlated currencies, CIU look-through approach

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### *Credit Valuation Adjustment*

Evaluation of exposure value, exclusions on non-relevant exposures, evaluation of counterparty weights, effective maturity and discounted EAD value, evaluation of own funds requirements

---

### *Operational Risk*

Calculation of capital requirements based on Basic Indicator Approach (BIA) and Standardized Approach

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### *Large Exposures*

Evaluation of an exposure value for clients and user-defined groups of connected clients, evaluation of large exposures exceeding regulatory thresholds, application of credit risk mitigation and exemptions, evaluation of large exposure limits and own funds requirements

---

### *Leverage Ratio & Capital Buffers*

Evaluation of an exposure value for the leverage ratio purposes, and the Tier 1 capital-based leverage ratio considering regulatory-approved exemptions  
The evaluation of capital conservation, countercyclical, systemic, OSII capital buffers w.r.t the residence country of an obligor

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### *Own Funds*

Calculation of deductions from CET1 capital, Tier 1 capital and Tier 2 capital, and evolution of measures for ITS COREP regulatory reporting



# Key Features

## Supported Scope of CRR III Regulation (Q2 2023)

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### *Credit Risk Standardized Approach*

Support of all new treatments and methods introduced by CRR III, including: new exposure classes, new CCFs assignment, changed treatment of institutions, corporates and exposures secured by mortgages, multiplier for currency mismatch, amendments to recognizing effects of financial collaterals

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### *Credit Risk IRB Approach*

Evaluation of limiting effect of output floor requirement, introduction of new exposure classes and input floors, changes in risk weight calculation, modified treatment of funded and unfunded credit protection

---

### *Operational Risk*

Introduction of new standardised approach for operational risk

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### *Market risk*

Additional multipliers for standardised approach for market risk, calculation of thresholds to determine applicable methods for capital requirements calculation

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### *Credit Valuation Adjustment*

Changed formula for capital requirements calculation, new risk weights assigned to counterparties (including differentiation between sectors), calculations of capital requirements with and without exclusions, new simplified approach added

---

### *Own funds*

Changes in calculation of deductions from CET1 capital, Tier 1 capital and Tier 2 capital

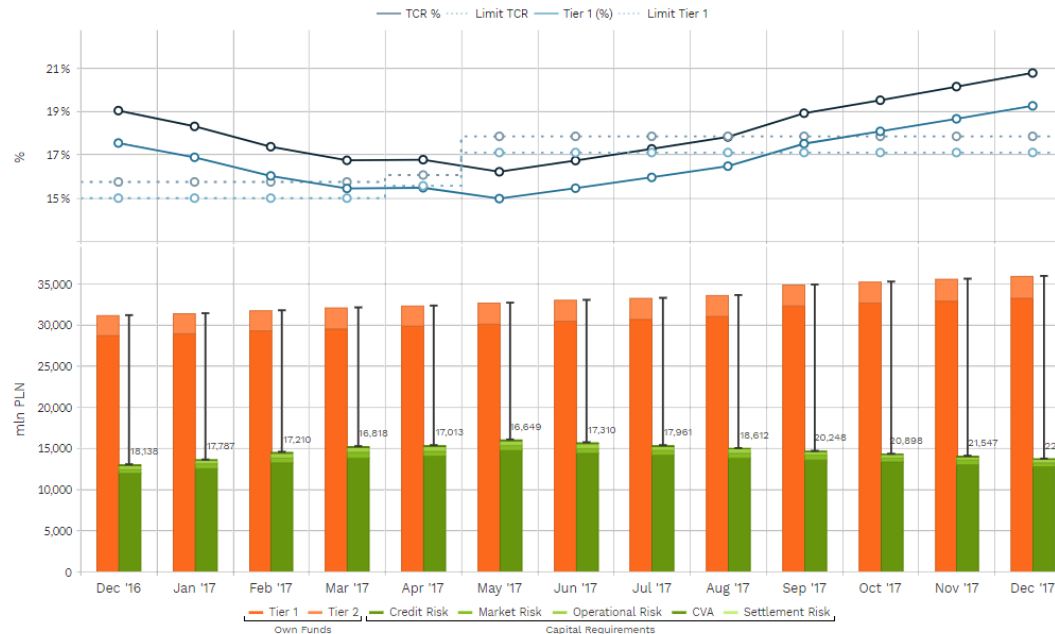
# Key Features

## Reporting and Analytics

### Powerful, expandable and efficient reporting and analytics

- Dashboards for senior management and advanced reporting tools for power users
- Interactive ad-hoc aggregation, slice and dice, drill-through and visualisation features
- Pre-defined capital adequacy, regulatory Pillar III reports and management reports
- Expandability with custom reports
- Exporting and sharing of reports in various formats (e.g. xls, pdf, html)

CAPITAL ADEQUACY OVERVIEW



## EXAMPLES

**Analysis of final or intermediate calculation results** (e.g. exposure value, risk weight, RWA) with respect to regulatory (e.g. exposure class, CQS, CRR reference tags) or business (e.g. exposure type, currency, division) perspective to gain better insight into capital requirements

**Identification of factors affecting capital requirements** with respect to user-defined breakdowns (e.g. effectiveness of credit risk mitigation, default levels)

**Trend analysis and monitoring** of measures relevant for capital adequacy purposes (e.g. limits, concentrations, IRB parameters)

**Comparison of capital requirements** calculated with different assumptions, methods or approaches (e.g. credit risk standardized and IRB approaches, simple and comprehensive collateral treatment methods, improved eligibility) to assess the impact and optimize RWA

# Key Features

## Stress-testing

### Parameter and scenario-based stress-testing

- Extensive set of editable parameters allowing to adjust calculations and reporting in line with new regulatory or user-defined requirements
- Support for multiple variants of parameters and comparative analysis of impacted CAD measures
- Flexible platform supporting parameter and scenario-based stress-testing calculations
- Easy remodelling of asset structure or any input data items with data transformations to reflect expected changes and new assumptions (e.g. for financial planning)

### EXAMPLES

Analyse an impact of future regulations, changes in current requirements (e.g. risk weights, thresholds, classification rules) and regulatory or internally modelled parameters (e.g. probability of default, credit conversion factors, volatility hair-cuts)

Perform regulatory stress-tests, Quantitative Impact Studies (QIS) and what-if analyses to observe and report an impact of supervisory or user-defined scenarios on capital requirements or any capital adequacy measures

Compare stress-test results with a predefined base scenario (i.e. unaltered asset structure and regulatory parameters)

Forecast capital requirements based on future regulatory, economic and business assumptions (e.g. increased number of defaults, asset growth, FX rates)



GrossValue by ExposureCRRClassCode and ExposureRWValue

ExposureRWValue ● 0,00% ● 20,00% ● 50,00% ● 100,00% ● 150,00%



#### METADATA

Id.	Name
3	Raise Defaults

#### Description

Increase the number of defaulted exposures

#### SOURCE CODE

```
1 foreach exposure
2   where .CRRDefTrigFlag = false
3     sample_pct @DefaultRaiseFactor
4 {
5   .CRRDefTrigFlag = true;
6
7   .CrAdjBalanceValue := .GrossBalanceValue;
8   .CrAdjOffBalanceValue := .GrossOffBalanceValue;
9 }
```

#### PARAMETERS

Name
@DefaultRaiseFactor

# Key Features

## Look and Feel

DeloitteFluent

CAD Regulatory Capital Parametrization \ CRDIV/CRR Credit risk \ Mitigants \ Risk Weights for Mortgage Exposures

### RISK WEIGHTS FOR MORTGAGE EXPOSURES

Items selected: 0

Tag	Exposure	Mitigant	Risk Weight	
CRR Class	FX	CRR Type	Country code	
CrrArt_127_3	Default	MortgResProp	PL	100 %
CrrArt_127_4	Default	MortgComProp	PL	100 %
CrrArt_125_1a_Fx		MortgResProp	PL	100 %
CrrArt_125_1a		MortgResProp	PL	35 %
CrrArt_127_3		MortgComProp	PL	100 %
CrrArt_127_3		MortgComProp	PL	50 %

Page 1 of 1 | 10 items per page | 1 - 6 of 6 items

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min EUR

2017-03 2017-04 2017-05 2017-06 2017-07 2017-08 2017-09 2017-10 2017-11 2017-12 2018-01 2018-02

Tier 1 Tier 2 CR MR DR CVA CapReq

Go to Reporting Dashboard

### FAVOURITE PROCESSES

- CORE/DATA\_LOADING Data Loading
- CAD/REGULATORY\_CAPITAL\_CALCULATION Regulatory Capital Calcul...

### FAVOURITE REPORTS

- CAD CAPREQ REG CR Results by Entity CRR Cla...
- CAD CAPREQ REG MR CIU Position by Market
- CAD CAPREQ REG MR Commodity Position Brea...



### RUN PROCESS

Run process

#### INPUT DATA

Name: CAD Calc June 17 | Description: Consolidated and Individual Results

Loadset business date: 6/2017 | Loadset: 6/30/2017, A, 1

CrAdj loadset business date: 6/2017 | CrAdj loadset: 6/30/2017, A, 1

#### CALCULATION SCOPE

Consolidation calculations:  Individual calculations:

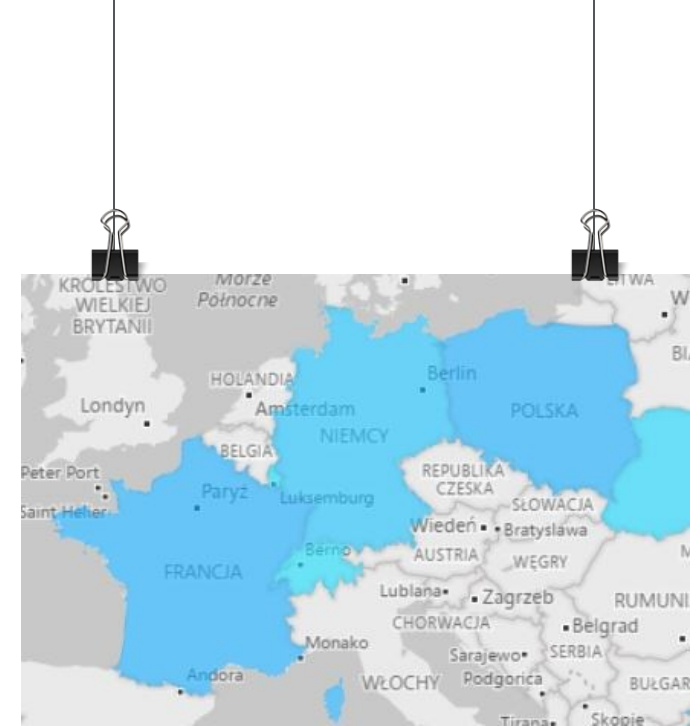
Own capital group members: \_FluentBank X \_FluentBrokerageHouse X \_FluentLeasing X

#### CALCULATION METHODS

Id	Name	CR	CCR	CVA	MR
1	P1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Page 1 of 1 | 10 items per page | 1 - 1 of 1 items

CANCEL RUN Advanced settings



ExposureTypeCode	CHF	EUR	PLN	USD	Total
_Debt	3 822 808	21 634 616	2 026 160	4 323 464	31 807 048
_Tngbl			9 376 000		9 376 000
_FxSwap			7 632 992		7 632 992
_CommodityOption			5 770 877		5 770 877
_GoldOption			1 270 640	1 935 440	3 206 080
_Cirs	908 732	2 223 190			3 131 922
_FxForward		2 699 934		282 472	2 982 406

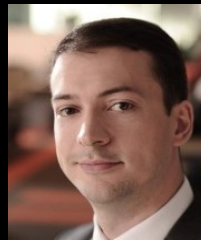
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# Deloitte **Fluent**



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## What Else Can We Do for You?

We are ready to discuss your needs and prepare a presentation of our software solution.

# Deloitte.

# DeloitteFluent

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