

SAS Analytics Experience 2018

*The IFRS9 Challenge: Between Regulatory Compliance
and Operational Efficiency*

24 October 2018

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- 7 SAS Risk Platform – The BMED Implementation
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Mediolanum Banking Group



BANKING

100%

ASSET
MANAGEMENT

100%

(direct & indirect ownership)

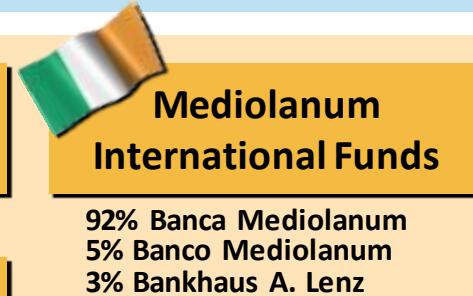
INSURANCE

100%

OTHER

100%

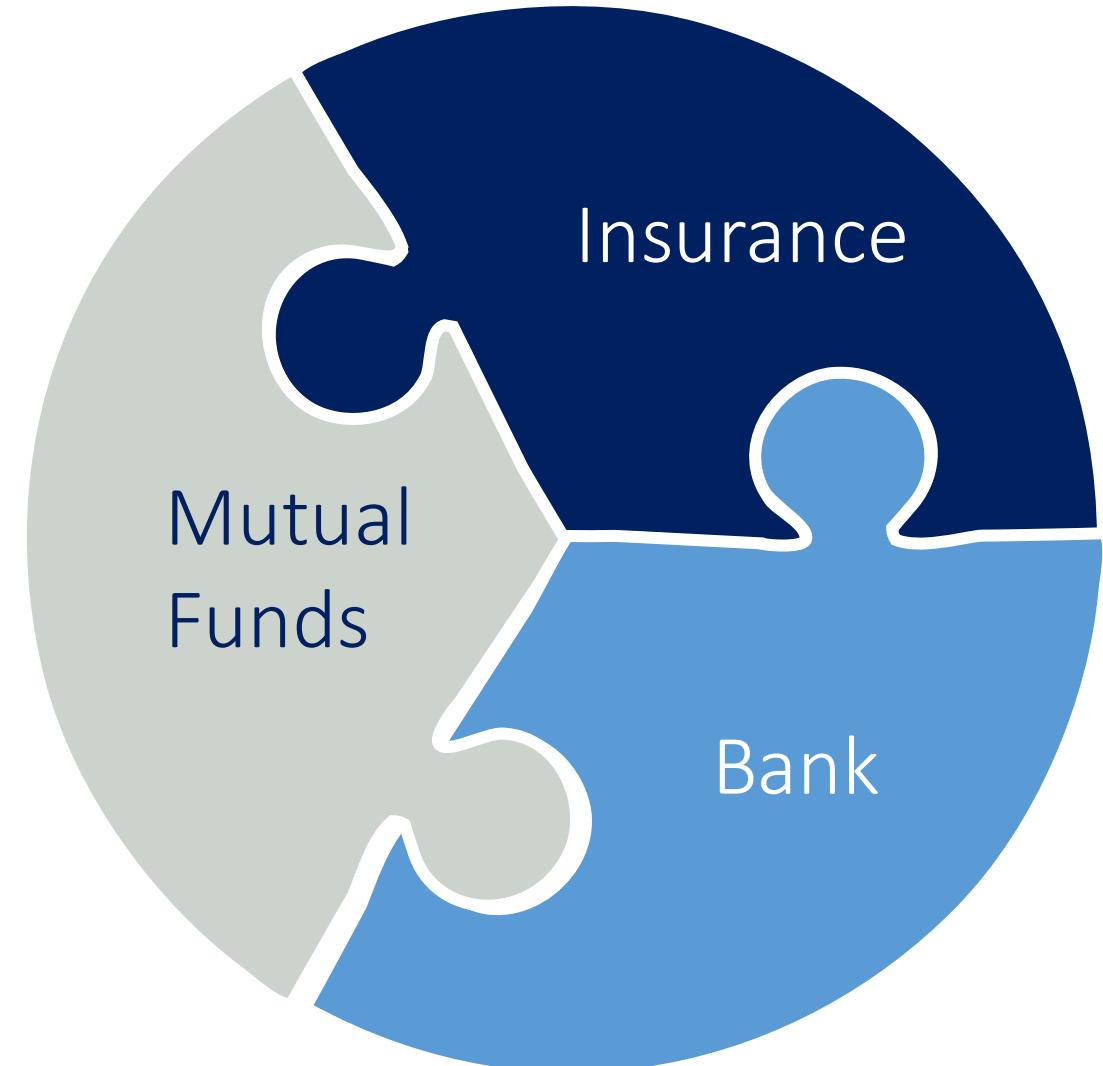
3.4% (directly & through Mediolanum Vita)



All companies
Italy-based unless
otherwise indicated

Banca Mediolanum Integrated Business Model

- We view the company as a single entity, providing solutions that best fit the needs of the customer, whether it be in the form of a mutual fund, an insurance policy or a bank product
- The Bank (est. 1997) has a special role as the place where customer savings are naturally built
- It is also where service quality is more readily appreciated & compared
- Therefore, it represents the mandatory point of entry for all new customers



Banca Mediolanum Multi-channel Model



A Bank with a Solid Set of Numbers

ROE

20.2%

10 Y avg. 2008- 2017

CET1

16.2%

Retail Deposits

€ 15.9 bn

Retail Credit Book

€ 7.9 bn

Total asset

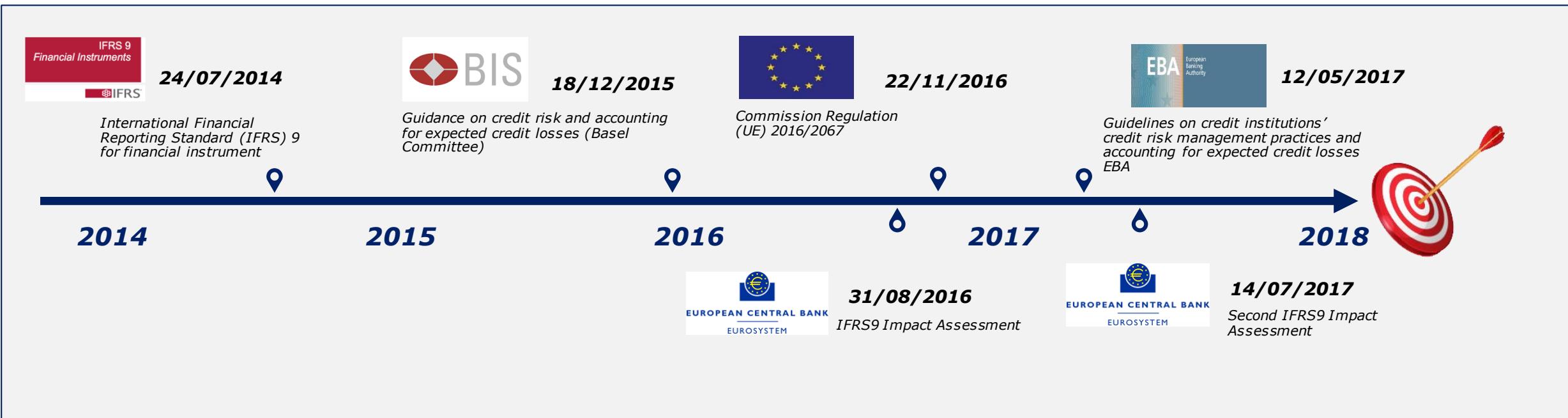
€ 28.3 bn

Banking book

€ 13.62 bn

Timeline IFRS 9

On 24 July 2014, the International Accounting Standards Board (IASB) published the International Financial Reporting Standard (IFRS) 9 for Financial Instruments. The Standard aims to improve financial reporting on financial instruments by addressing problems witnessed during the last financial crisis. IFRS 9 responds to the G20 invitation to embed forward-looking information for recording expected losses on financial assets.



Overview IFRS9

IFRS 9 is the accounting standard that defines, by substituting IAS 39, the rules for the classification and measurement of financial instruments, with the aim of improving the relevance and effectiveness of the financial information. According to the EBA, IFRS 9 is an overall improvement compared to IAS 39 for the accounting of financial and credit instruments; the new provision due to credit risk should overcome the "too little, too late" problem recorded both on loans and financial instruments.



Classification and measurement

The choice of the business model must provide a representation of the management of financial assets by the companies consistent with actual, past and future operations. IFRS9 does not change the operation in the substance, but represents it more precisely in the financial statements.

HTC

- held in order to collect fixed and determinable contractual cash flows with fixed term, equities are excluded.
- SPPI compliant
- they are evaluated at the amortized cost, if the outcome is negative, the evaluation takes place at the FVTPL.
- they are subjected to Impairment for the recognition in the Income Statement of the expected loss.

HTC&S

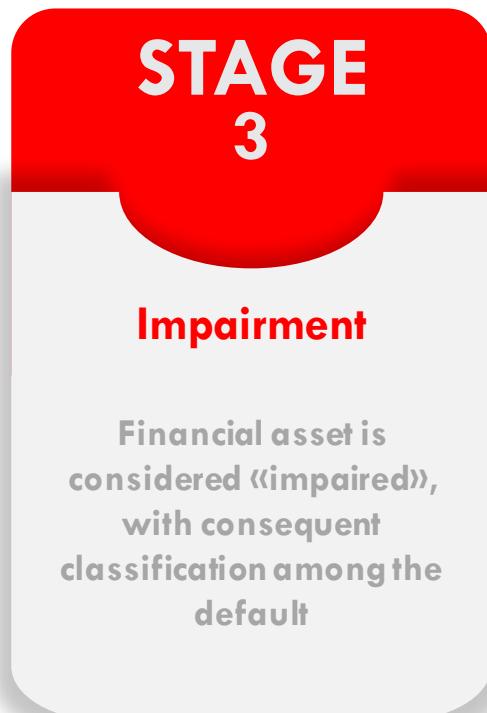
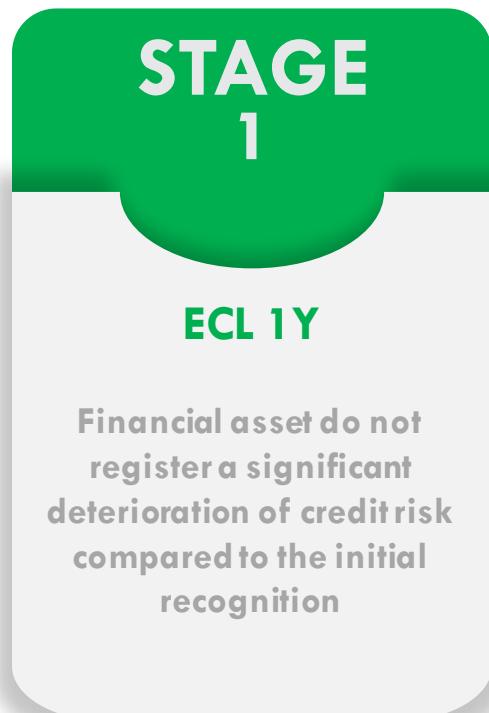
- Held to collect contractual cash flows and profits from the sale.
- SPPI compliant for debt securities, for equity securities the choice is to be considered irrevocable.
- they are valued at FVTOCI, if the SPPI outcome is negative, the assessment is made at the FVTPL.
- the debt securities are subjected to each reporting date to Impairment for the recognition in the Income Statement of the expected loss.

Other

- held to generate cash flows from the sale of financial assets
- the financial instruments classified according to the Business Model Trading are valued at the FVTPL and are not subject to Impairment.

Staging

The model requires that at each reporting date the entity recognizes a provision for expected losses due to credit risk and is based on a staged approach:



Impairment

IFRS9 introduces, for financial instruments, a new Impairment model based on the concept of Expected Credit Loss (ECL), with the aim of recognizing losses more properly and quickly.

The concept of ECL must incorporate three main aspects:

PIT

ECL must reflect a point-in-time loss that takes into account the losses that are actually recorded at the reporting date. This concept is opposed to that of Through the cycle (TTC) typical of supervisory regulations which, on the other hand, takes into account losses recorded at least in one economic cycle.

Forward Looking

Compared to IAS 39, where a concept of loss incurred was found, IFRS9 transforms this concept into expected (expected). For this purpose, a greater (or lesser) loss should be added to the PIT loss depending on the future economic prospects.

Lifetime

ECL Lifetime is a weighted estimate for the probabilities of losses due to credit risk (present value of all due cash receipts) over the residual life of the financial asset.

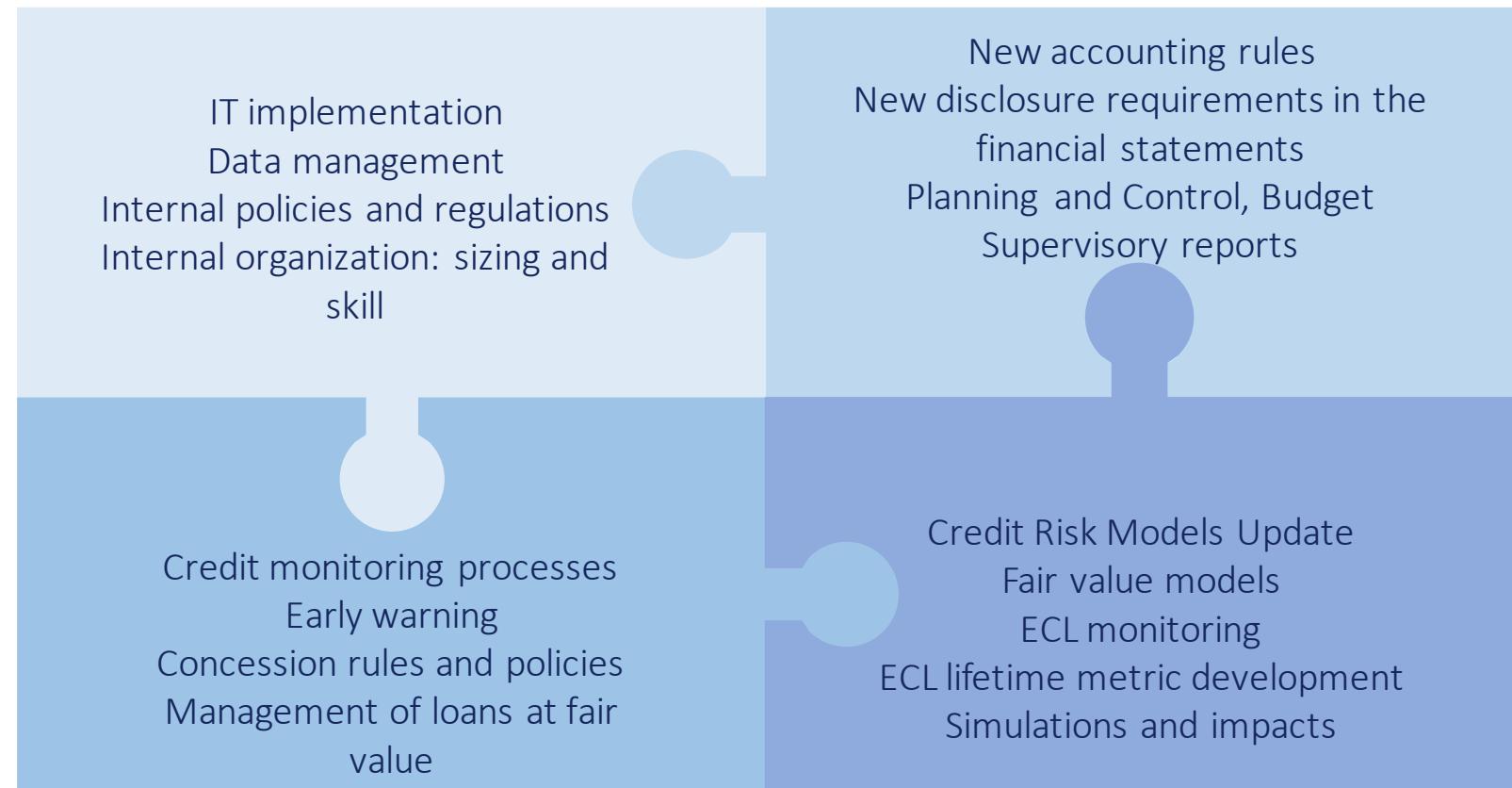
$$ECL_{1 \text{ Anno}} = EAD * (PD_{0,1}) * LGD$$

$$ECL_{\text{lifetime}} = \sum_{t=1}^M \frac{EAD_t * (PD_{0,t} - PD_{0,t-1}) * LGD_t}{(1 + R)^{t-1}}$$

Overall Impact

In addition to being an accounting standard that impacts accounting and risk management, IFRS9 has effects on a series of processes within the bank.

Below is a brief overview of what are the most impacted aspects and structures within the bank:



Project – Conflicting requirements?

The Bank looked for a solution that could be customized according to all bank's internal actors needs



Internal model with different features

Integration in business processes

Timely reporting
and easy data
access

Granular data

CEDACRI looked for a solution that could be used for all banks in the consortium.



Wide range of Consortium models

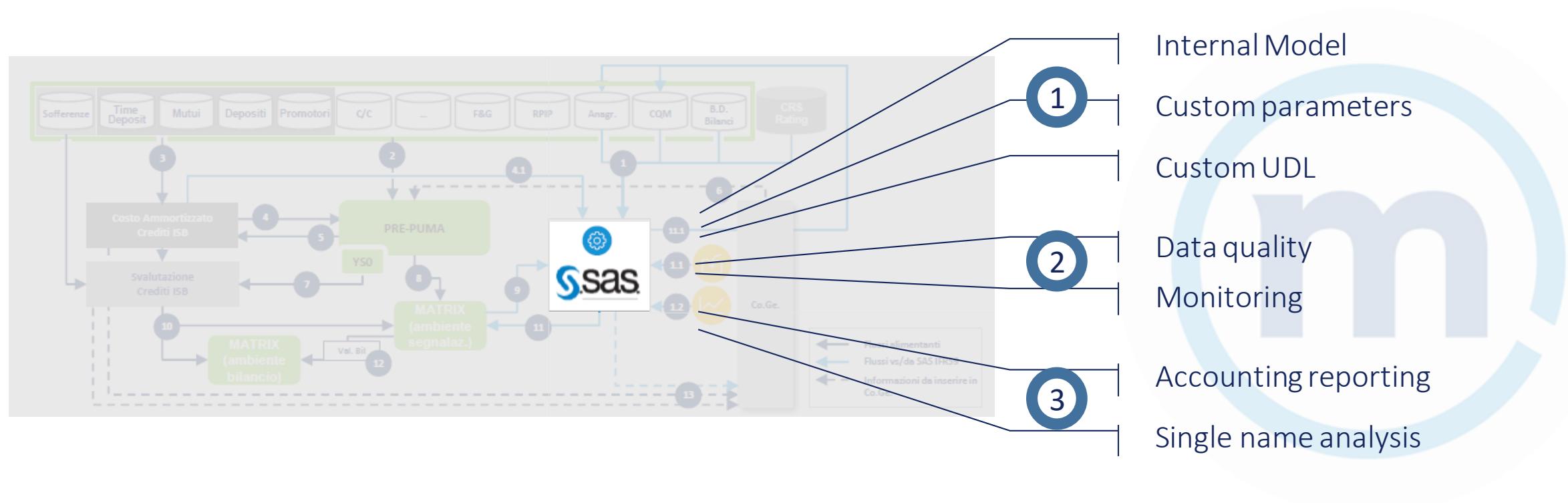
Integration with existing data flow

Smooth Initial set up and maintenance



SAS Risk Platform – The BMED implementation

CEDACRI choose a solutions that could meet all requirements both from the banks and IT Outsourcer: SAS Risk Platform. SAS RP was implemented in existing and validated processes, that include accounting and regulatory reporting, giving a wide range of customization.



Internal models



Framework is complex and involved different models, processes and methodologies.

Retail



- PD: internal model is used both for rating and ECL calculation. PD lifetime curves are loaded to SAS as parameters



- LGD: custom LGD is adopted for retail costumer and loaded to SAS as parameters.



Corporate



- PD: consortium models are used to provide rating, PDs curves are calibrate according to each Bank risk profile



- LGD: is provided by consortium models and loaded by CEDACRI in SAS.



Sovereign



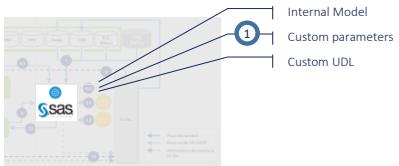
- PD: ratings come from ECAI evaluation and loaded by CEDACRI, PDs curve were developed by the bank and linked with rating inside SAS



- LGD: Internal LGD for sovereign exposure are loaded to SAS as parameters.



Custom Parameters

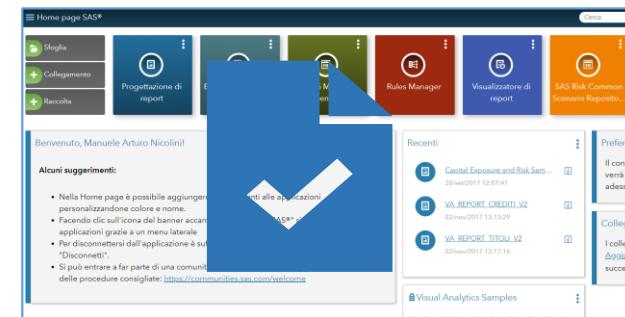


Internal models are developed in laboratory environment. PD and LGD curves are loaded to SAS risk platform after been tested with a parallel run.

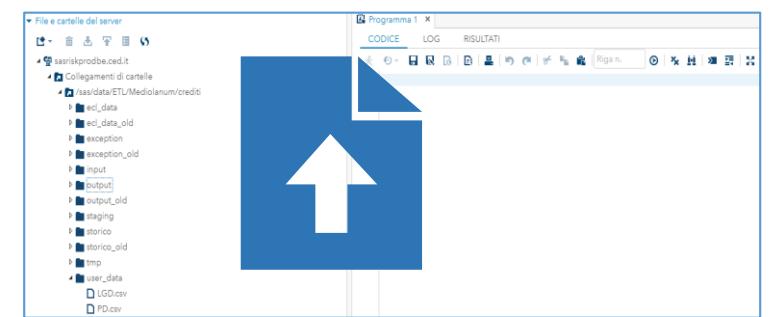
Laboratory environment.



Testing parameters with a parallel run in MIP



Load parameter in production repository

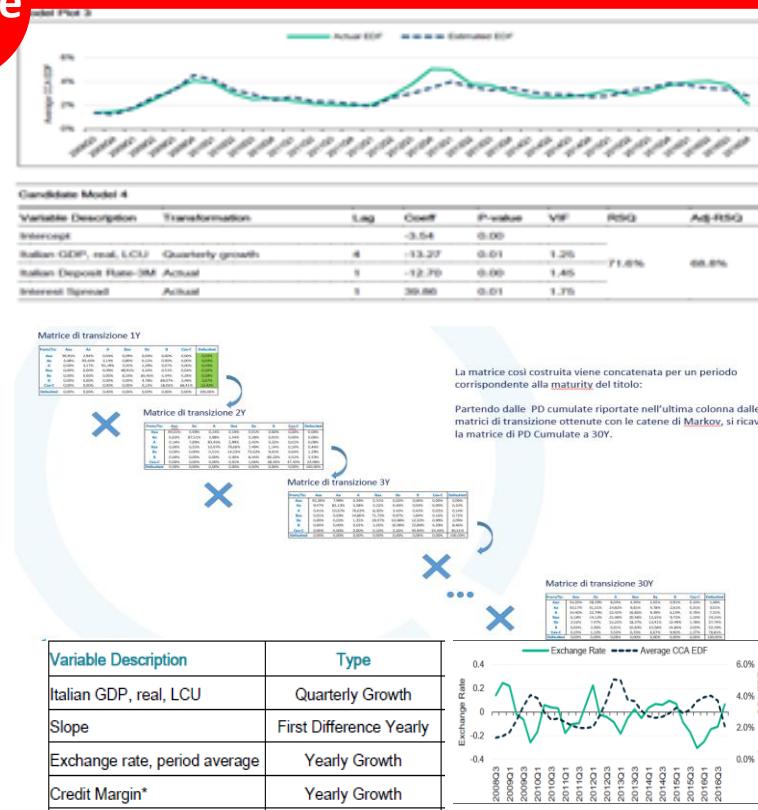


Custom UDL



Within UDL, it is possible to embed different models and manage them in a closed and “safe” environment. No more “flying” excel files.

Before



$$\ln \frac{Y_t}{(1 - Y_t)} = \alpha + \sum_{i=1}^M (\beta * X_{i,t}) + \epsilon_t$$



After

Modelli

Cerca	Sistema di modellizza...	ID modello	Descrizione
<input type="checkbox"/> RETAIL_MS		RETAIL_MS	Modello Satellite contr...
<input type="checkbox"/> TRAN_MATRIX		TRAN_MATRIX	matrici di transizione p...

Gruppi di modelli

Cerca	Sistema di modellizza...	Sviluppato dall'organig...	Versione bla...
<input type="checkbox"/> IFRS9_CREDITI_UDL_V4			
<input type="checkbox"/> IFRS9_CREDITI_UDL_V4	IFRS9_CREDITI (1)		
<input type="checkbox"/> RETAIL_LIFETIME_TEST			

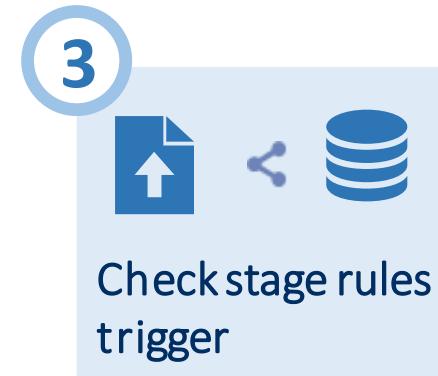
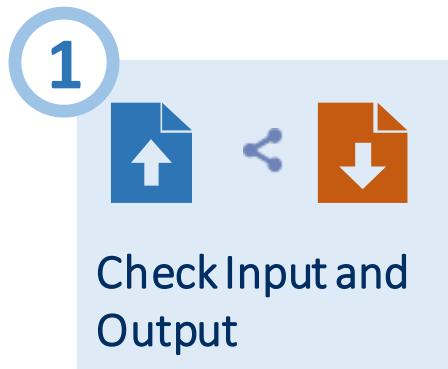
Implementazione del modello

Cerca	Esecuzio...	Tutte le e...
<input type="checkbox"/> SCENARIO_PDL1	Completo...	
<input type="checkbox"/> CUBO_PDL1	Completo...	
<input type="checkbox"/> SCENARIO_TEST1	Completo con errori	
<input type="checkbox"/> TEST1	Completo...	
<input type="checkbox"/> SCEANRIO_MAGGIO	Completo...	

Data quality



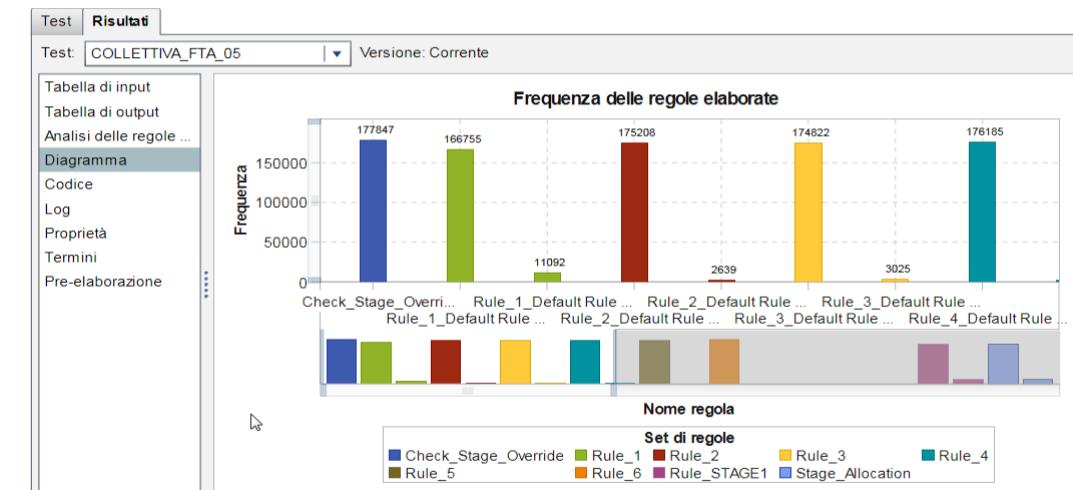
Check data inside SAS Risk Perform with other dataset, repository and data flow of the institution.



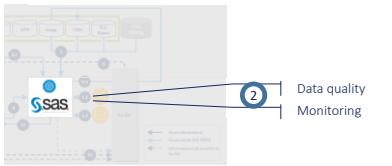
Rules Manager

Regole di business: Set di regole (21 di 21) | Cerca: (nessuno)

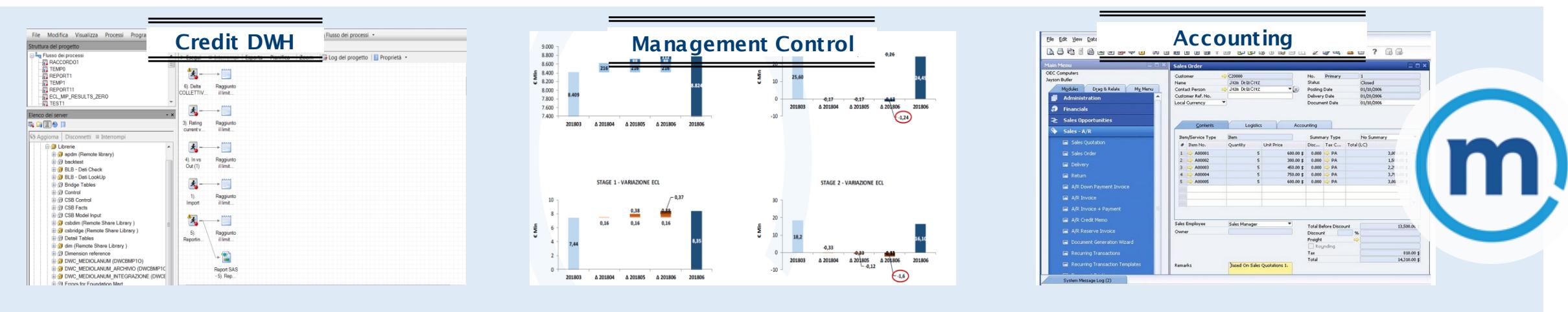
Nome	Tipo	Des...	Data di modifica	Modificato da
Mediolanum Crediti	Set di regole		23 novembre 2017 22:53	sasinst
IFRS9 - Stage Allocation Crediti	Set di regole		23 novembre 2017 22:53	sasinst
Check_Stage_Override	Set di regole		23 novembre 2017 22:53	sasinst
Output_other_terms	Set di regole		23 novembre 2017 22:53	sasinst
Rule_1	Set di regole		23 novembre 2017 22:53	sasinst
Rule_2	Set di regole		18 dicembre 2017 13:23	Manuele Arturo Nicolini
Rule_3	Set di regole		23 novembre 2017 22:53	sasinst
Rule_4	Set di regole		23 novembre 2017 22:53	sasinst
Rule_5	Set di regole		23 novembre 2017 22:53	sasinst
Rule_6	Set di regole		23 novembre 2017 22:53	sasinst
Rule_7	Set di regole		04 luglio 2018 10:49	Manuele Arturo Nicolini
Rule_8	Set di regole		04 luglio 2018 11:20	Manuele Arturo Nicolini
Rule_STAGE1	Set di regole		04 luglio 2018 11:30	Manuele Arturo Nicolini
Stage_Allocation	Set di regole		23 novembre 2017 22:53	sasinst
Mediolanum Titoli	Set di regole		23 novembre 2017 22:53	sasinst



Monitoring



Before results are shared with accounting and business functions, output is analyzed, compared with previous ones, checked and then validated. Monitoring is carried on both inside SAS Risk Platform and other Bank system.



Accounting Reporting



3
Accounting reporting
Single name analysis

Accounting function can easily access SAS Reporting tool to download data in a properly designed output suitable for the accounting system.

SAS® Visual Analytics - Visualizzatore di report

VA_COLLETTIVA_CREDITI_LAB

COLLETTIVA ANALISI NDG

REPORTING_DT FLAG_INFRAGRUPPO_LAB PRODUCT_SUBCLASS Stage Allocation EAD_CURRENT ECL_SAS ECL_FINAL_LAB

REPORTING_DT	FLAG_INFRAGRUPPO_LAB	PRODUCT_SUBCLASS	Stage Allocation	EAD_CURRENT	ECL_SAS	ECL_FINAL_LAB
		- 0101101	+ STAGE 1			
		- 0101756	+ STAGE 1			
		- 0104142	+ STAGE 1			
		- 0110302	+ STAGE 1			
		- 0110306	+ STAGE 1			
		- 0111518	+ STAGE 1			
		- 0111532	+ STAGE 1			

ecl_mip_results.sas7bdat

Visualizzazione: Etichette delle colonne | Filtro: (nessuno)

Colonne Righe totali: 1007653 Colonne totali: 145 Rige 1-100

COUNTERPARTY_KEY_ID	ELAB_DT	REPORTING_DT	ENTITY_ID	ABI
1 030620000000008159887	11 settembre 23 agosto 2018	88	030	
2 03062000000008056074	11 settembre 23 agosto 2018	88	030	
3 03062000000007961669	11 settembre 23 agosto 2018	88	030	
4 03062000000008369578	11 settembre 23 agosto 2018	88	030	
5 03062000000008369578	11 settembre 23 agosto 2018	88	030	
6 03062000000008359182	11 settembre 23 agosto 2018	88	030	
7 03062000000008373621	11 settembre 23 agosto 2018	88	030	
8 03062000000007953187	11 settembre 23 agosto 2018	88	030	
9 03062000000007958230	11 settembre 23 agosto 2018	88	030	
10 03062000000007953178	11 settembre 23 agosto 2018	88	030	
11 03062000000007893734	11 settembre 23 agosto 2018	88	030	
12 03062000000007893734	11 settembre 23 agosto 2018	88	030	
13 03062000000007893734	11 settembre 23 agosto 2018	88	030	
14 03062000000007831920	11 settembre 23 agosto 2018	88	030	
15 03062000000007831928	11 settembre 23 agosto 2018	88	030	
16 03062000000007820082	11 settembre 23 agosto 2018	88	030	
17 03062000000007801498	11 settembre 23 agosto 2018	88	030	
18 03062000000007801498	11 settembre 23 agosto 2018	88	030	
19 03062000000007801498	11 settembre 23 agosto 2018	88	030	
20 03062000000007681669	11 settembre 23 agosto 2018	88	030	
21 03062000000007990394	11 settembre 23 agosto 2018	88	030	

Proprietà Valore

Etichetta

Nome

Lunghezza

Tipo

Fmt. output

Fmt. input



Main Menu

OEC Computers Jayson Butler

File Edit View Data Goto Modules Tools Window Help

Sales Order

Customer C20000 Name Jtaia De B Crtz Status Closed

Contact Person Jtaia De B Crtz Customer Ref. No. Local Currency

Modules Drag & Relate My Menu

Administration

Financials

Sales Opportunities

Sales - A/R

- Sales Quotation
- Sales Order
- Delivery
- Return
- A/R Down Payment Invoice
- A/R Invoice
- A/R Invoice + Payment
- A/R Credit Memo
- A/R Reserve Invoice
- Document Generation Wizard
- Recurring Transactions
- Recurring Transaction Templates

Contents Logistics Accounting

Item/Service Type	Item	Quantity	Unit Price	Disc... Tax C...	Total (LC)
1 A00001	5	\$600.00	0.000 PA	3,000.00 \$	
2 A00002	5	\$300.00	0.000 PA	1,500.00 \$	
3 A00003	5	\$450.00	0.000 PA	2,250.00 \$	
4 A00004	5	\$750.00	0.000 PA	3,750.00 \$	
5 A00005	5	\$600.00	0.000 PA	3,000.00 \$	

Sales Employee Sales Manager Total Before Discount 13,500.00 \$

Owner Discount % Freight

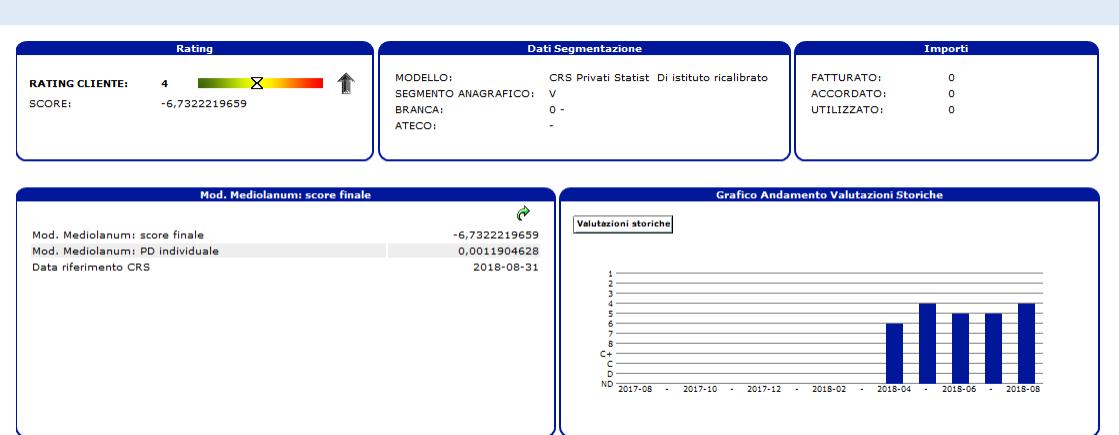
Remarks Based On Sales Quotations 1.

System Message Log (2)

Single Name analysis



Credit function can directly check stage and ECL on existing positions. It could be useful to monitor the single credit quality position and to assess new credit exposure. SAS can be set up both for high level and deep drill down analysis.



- Second lend
- Report of error system
- Risk evaluation

Stage

- Stage 1
- Stage 2
- ECL
- Triggers of Stage
- Detailed information of position and customer

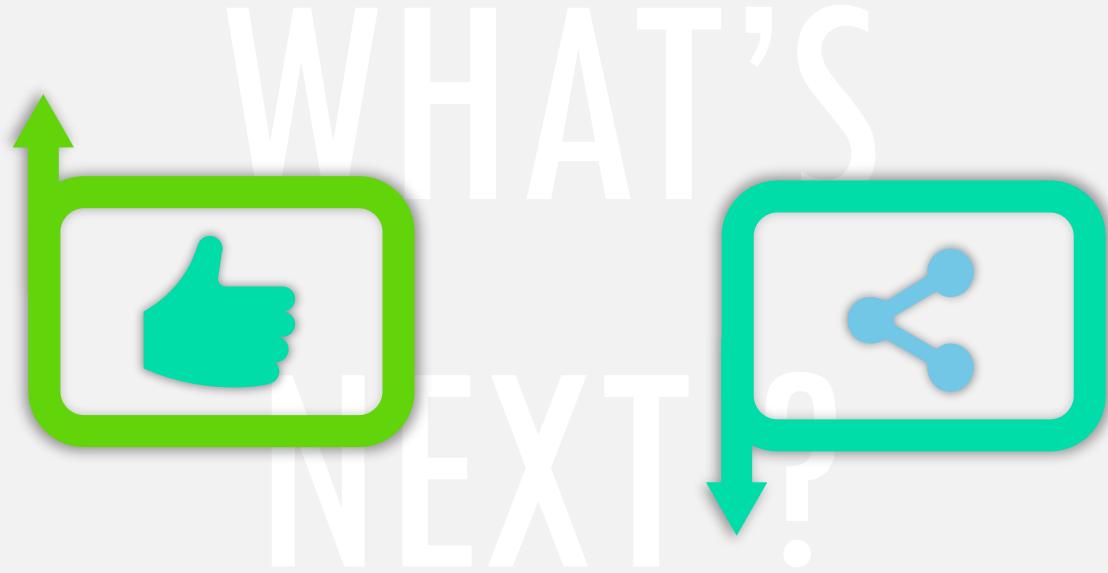
ECL

Conclusions



Challenging project successfully completed with a solid state of the art technological platform allowing multidimensional analysis and scalability

Model Validation
Exploring innovative solutions involving AI/machine learning



Model Governance
Model Risk (from governance to modelling)