

# Collateral Management System

In response to the financial crisis, supervisory authorities all over the world have introduced significant regulatory changes to mitigate risks especially those related to unsecured transactions. Since 2008, the counterparty risk topic has taken on a completely new dimension: The collateral volume and the complexity of collateral management have experienced a great surge - and the trend is rising.

## Product Information

### Key Benefits

- ◇ Representation, management and independent evaluation of numerous traditional as well as complex derivatives and various collateral types e.g. cash, bonds, real estate, cash guarantees
- ◇ Management of information on SSIs, counterparties and collateral agreements
- ◇ Monitoring of the positions as well as internal and regulatory limit checks
- ◇ Internal reporting
- ◇ Calculation of VM and IM based on internal model and/or the standardised method
- ◇ Calculation of the MVA
- ◇ Calculation of interest to be paid/received for collaterals
- ◇ Fully automatic calculation process in batch mode
- ◇ Dashboard representation of calls
- ◇ Creates and sends margin and interest events
- ◇ Transparent calculations
- ◇ Dispute support
- ◇ Evaluation of market and counterparty risks
- ◇ Monitoring of liquidity risks
- ◇ EMIR reporting management and CMS - EMIR portfolio reconciliation

### Risks and Collaterals

Much-Net GmbH has developed a number of solutions to assist you in the effective allocation and management of collaterals, to reduce your costs and time expenditure and to increase your control of risks and collaterals.

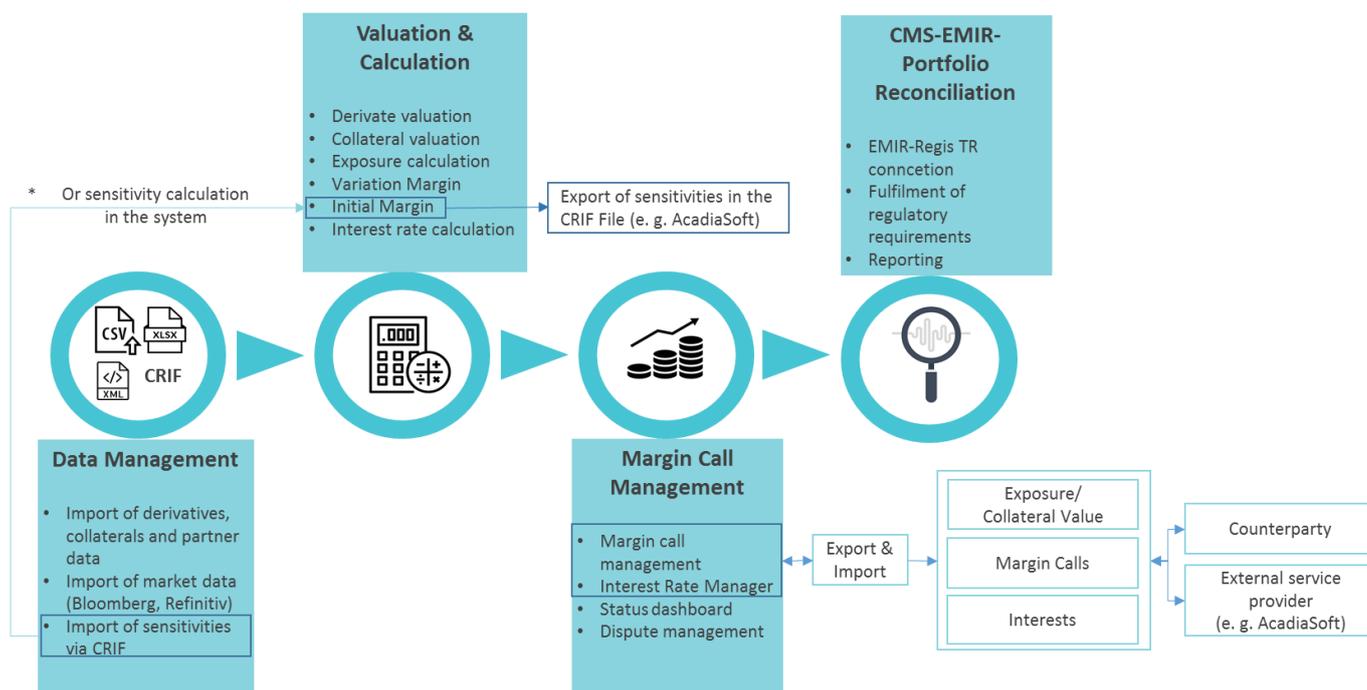


Our Portfolio and Risk Management Software **PMS** offers you a Collateral Management System (CMS) that comprises vital components such as the import and reconciliation of counterparty data, collateral/exposure/margin calculation, margin call management, collateral management and EMIR reconciliation.

# Collateral Management

The **PMS** portfolio and risk management system supports the representation and valuation of numerous traditional as well as complex derivatives. PMS cannot only be used to pledge cash as collateral, it is also able to represent and manage a number of other collateral types, e.g. bonds and shares, real estate, cash guarantees etc. Instrument data and valuation-relevant market data can either be automatically imported into the system or captured manually. The PMS system also allows for a parallel import of the counterparties' valuation for the derivative exposure calculation.

PMS also provides a well-arranged presentation and management of the relevant counterparty information and of collateral agreement parameters such as MTAs (Minimum Transfer Amounts), thresholds, rounding specifications, eligible collaterals, haircuts etc.



Our solution allows you to calculate the variation margin (VM) as well as the initial margin (IM), so a netting can be done when necessary. Calculation of the margin value adjustment (MVA) is supported as well.

The initial margin can be calculated based on an internal model and/or a standardised method:

- ◇ The initial margin calculation based on the **internal model** applies the Hybrid Hull-White Model, while the Monte Carlo Model is used for modelling the correlations between the risk classes (Interest, FX, Equity, Indices and Commodities)
- ◇ The initial margin calculation based on the **standardised method** subdivides the positions of the derivative portfolio into four product classes (Interest/FX, Credit, Equity, Commodity) and computes the margins for each risk class (Interest Risk, FX Risk, Credit Risk etc.) within each product class.

(See the “Initial Margin” flyer for more information)

The CMS interest calculation analysis calculates and aggregates the interest payments within a specific time interval to/from a specific counterparty depending on the posted collaterals and their currencies.

## Dashboard

All counterparties' current calls and their status are presented in clearly structured dashboards from where events can be triggered (this allows for a settlement of each margin call per counterparty). The dashboard also provides an overview of historical events.

The screenshot shows the 'PMS - CMS Margin Dashboard' interface. It includes a menu bar (Action, Filter, Options, Miscellaneous, Logging, Layout, Help) and a toolbar with buttons for Exit, Load, Own, CP, No Demand, Today, Todos, and Disputed. A search bar is present at the top left. The main area displays a table with the following columns: Kontrahent, Margin Kategorie, Call Typ, Call Status, Call Richtung, Marginbetrag, Marginbetrag (Kontrahent), Vereinbarter Marginbetrag, Disputed Marginbetrag, Währung, Datum, Grund, and Kommentar. The table contains 10 rows of data, including entries for Bardays Bank PLC, Commerzbank AG, Landesbank Baden-Württemberg, Citibank NA, London Branch, and Morgan Stanley & Co. Int. Plc, London.

Kontrahent	Margin Kategorie	Call Typ	Call Status	Call Richtung	Marginbetrag	Marginbetrag (Kontrahent)	Vereinbarter Marginbetrag	Disputed Marginbetrag	Währung	Datum	Grund	Kommentar
1 Bardays Bank PLC	VM	No Demand	New	None	0,00	0,00	0,00	0,00	0,00 EUR	08.07.2019 00:00:00		
2 Commerzbank AG	VM	Own	Completed	Outgoing	1.040.000,00	1.040.000,00	1.040.000,00	0,00	0,00 EUR	08.07.2019 00:00:00	Bestätigt	Bestätigt
3 Landesbank Baden-Württemberg	VM	CP	Called	Incoming	-1.130.000,00	-1.130.000,00	-1.130.000,00	0,00	0,00 EUR	08.07.2019 00:00:00		
4 Citibank NA, London Branch	VM	CP	New	Incoming	-5.360.000,00	0,00	-5.360.000,00	0,00	0,00 EUR	08.07.2019 00:00:00		
5 Morgan Stanley & Co. Int. Plc, London	VM	CP	New	Incoming	-3.700.000,00	0,00	-3.700.000,00	0,00	0,00 EUR	08.07.2019 00:00:00		
6 Bardays Bank PLC	IM	CP	Disputed	Incoming	-330.000,00	-1.000.000,00	0,00	670.000,00	0,00 EUR	08.07.2019 00:00:00	Abweichung	Abweichung bei der FX-Derivate
7 Commerzbank AG	IM	CP	New	Incoming	-404.809,93	0,00	-404.809,93	0,00	0,00 EUR	08.07.2019 00:00:00		
8 Landesbank Baden-Württemberg	IM	Own	New	Outgoing	420.000,00	0,00	420.000,00	0,00	0,00 EUR	08.07.2019 00:00:00		
9 Citibank NA, London Branch	IM	Own	New	Outgoing	300.000,00	0,00	300.000,00	0,00	0,00 EUR	08.07.2019 00:00:00		
10 Morgan Stanley & Co. Int. Plc, London	IM	No Demand	New	None	0,00	0,00	0,00	0,00	0,00 EUR	08.07.2019 00:00:00		

Outgoing and incoming events can be sent and imported automatically to/from counterparties or to/from external service providers such as AcadiaSoft.

The dashboard automatically updates the status of the events accordingly.

A dashboard offering analogous functions has also been implemented for the CMS interest calculation analysis.

## Dispute Support

In case of a dispute arising out of a significant deviation from the counterparty's result, PMS offers a transparent representation of the calculation foundation.

User are able at any time to retrace the valuation steps including the market data used (FX rates, interest rate curves, volatilities, spreads, market prices...). The finance-mathematical models can be explained and validated as needed.

The sensitivities of the risk factors on position level serve as a basis for the initial margin calculation and can be exported out of the system into the CRIF format commonly used in the market. Moreover PMS ensures transparency of the results of the intermediate steps of the IM calculation e.g. weighting of the sensitivities, aggregation of the sensitivities on risk factor level and a breakdown into margin subcategories (Delta, Vega etc.) and is able to export the results out of the system.

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