

RISK MANAGEMENT

INITIAL MARGIN

Empowering the Financial World
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Business Overview

In September 2009, as a reaction to the financial crisis, G-20 leaders at the Pittsburgh summit committed to a number of reforms to the over-the-counter (OTC) derivatives market. To improve transparency and reduce systemic risk, it was agreed that standardized OTC derivatives should be centrally cleared, while non-centrally cleared contracts would be subject to higher capital requirements. This precipitated a wave of global regulations and new clearing services leading to a vast array of new costs and complexity for today's derivative dealer.

FIS' Adaptiv Initial Margin enables financial institutions and non-financial counterparties to better manage margin requirements in this new market environment. The FIS solution suite helps the user manage liquidity risk whilst reducing trading and collateral costs, ensuring reliable initial margin calculations and providing efficient clearing processes.

Central clearing

To mitigate their own risks due to counterparty default, CCPs require counterparties to post initial margin (IM) as upfront collateral, variation margin (VM) as deal marks change and to contribute to Default Funds.

Non-centrally cleared derivatives

In September 2011, the Basel Committee on Banking Supervision (BCBS) and the International Organization of Securities Commissions (IOSCO) published the framework for margin requirements for non-centrally cleared derivatives. This requires IM to be exchanged on a bilateral basis between most financial and certain non-financial counterparties.

Initial margin challenges

In the world of OTC derivatives, the concept of IM is considerably less well developed than in the exchange traded world. As a direct result of regulatory change, the total amount of IM required across the global financial system is set to increase significantly – creating liquidity and cost of funding issues for many derivatives counterparties. At the same time, the high quality collateral required to be posted by most CCPs is becoming more expensive.



DID YOU KNOW

Depending on the product and the classification of the derivative it is estimated that 50-80 percent of OTC derivatives will be eventually centrally cleared requiring additional collateral estimated to be in the trillions by some studies.

SOURCE: INITIAL MARGIN: A COMMENTARY ON ISSUES FOR CENTRALLY CLEARED AND NON-CLEARED BUSINESS, OCTOBER 2013

Reducing the pre-deal costs of OTC trades

It is important to remember that IM is significantly increasing the cost of trading. Traders need to fund collateral, and increasingly must consider all costs when pricing a trade. What is more, the price cannot consider the trade in isolation, but must consider all relevant positions that a firm holds with a CCP or clearing broker making the calculation more complex operationally and computationally. For optimal trading decisions, traders therefore need the ability to calculate, pre-deal, how much incremental IM a trade will require and of course to understand if the trade is even eligible for clearing at the venue being considered. For futures commission merchants (FCMs) and clearing members, pre-deal IM calculations form part of the decision on whether to accept new trades for clearing from their clients. For buy-side firms, understanding the CCP margin helps determine if the right prices are being used. In the U.S., where clearing members have a 60-second window in which to accept or reject a trade for clearing, the need to process CCP eligibility rules and make timely IM calculations, often for complex block trades, is even more important.

Validating margin calls

Everyone makes mistakes, even clearing houses. With CCPs making margin calls for many millions of dollars, it is important for participants to be comfortable they are being called for the correct margin amount. It may not be possible to dispute the margin call on the day, participants can query and have errors corrected subsequent calls.



Choosing an optimal CCP – for new trades and backloading positions

Often there will be a choice of CCP through which to clear a trade – or, for buy-side firms that clear indirectly, which clearing broker to utilize to access a particular CCP. Many sell-side institutions will opt to clear their portfolio predominantly through one CCP, for example to maximize their ability to cross-margin and offset IM requirements. Meanwhile, larger firms will elect to maintain active relationships with more than one CCP or FCM, to reduce concentration risk or better manage “multiplier” margin charges.

In all cases of multiple CCP relationships, a clear overview of the costs and benefits of each clearing house will be critical to choosing the optimal, most cost-effective venue for a trade. At a minimum this will require the rapid pre-deal calculation of IM. For a more complete analysis, the user will probably want to calculate the expected IM calls at future points in time to be able to estimate expected IM over the lifetime of the trade and associated cost of funding.

The same applies to institutions that are looking to backload existing bilateral trades to a CCP, to reduce their capital charges and credit valuation adjustment (CVA) costs. Before deciding how valuable or costly backloading may be, they will need to establish the cost of funding IM at the CCP.

They must then compare it with the capital and CVA relief being gained, along with other costs such as default fund contribution and fees.

Similar considerations must be made for bilateral trades from as early as the end of 2015, balancing cost of margin for uncleared derivatives against other options.

Improving risk management

A spot IM calculation on a deal is only the start of the story. A centrally cleared trade will generate different IM requirements throughout its lifetime, and the risk of a significant increase in IM must be managed carefully. So, it will be vital for institutions to make IM requirements part of their liquidity risk management framework and incorporate them into their enterprise stress tests. How much, for example, would total IM requirements change under specified macro-economic shocks? Only with the power to stress test IM can such important questions be answered in the name of risk management.

Stress testing may also form part of pre-deal clearing decisions. When choosing the most appropriate CCP for a trade, some participants will opt for one not only with the lowest IM – but also whose IM will be cheaper under a stressed market scenario.

FIS can help

FIS’ Adaptiv Initial Margin solution suite helps firms assure liquidity and protect revenues by:



Reducing trading costs

Reducing trading costs

IM is an inescapable part of the derivatives landscape. In order to be able to manage IM and collateral funding costs, it is necessary for banks to be able to calculate IM accurately and rapidly. What is more, with it becoming mandatory for many bilateral OTC relationships, the scope is increasing.

A proactive approach to managing IM demands will help banks keep down their collateral, trading and funding costs and optimize liquidity. With a consistently clear view in advance of CCPs’ different IM requirements, institutions can make more informed and cost-effective clearing choices. Even when no choice of clearing venue is to be made, knowing the cost IM in advance will allow banks to pass on the costs to clients as deals are agreed for both the client trades and associated hedges. By making IM calculations part of their stress tests, institutions will be better able to future-proof all these decisions.

DID YOU KNOW

The International Swaps and Derivatives Association (ISDA) has published principles for CCP Recovery which include recommendations for transparent risk management standards, practices and methodologies. Specifically: The practices, standards and methodologies used by CCPs to size their loss-absorbing resources, which include initial margin (IM), default-fund (DF) contributions and CCP ‘skin in the game’ (SITG), need to be transparent to market participants.

SOURCE: ISDA – PRINCIPLES FOR CCP RECOVERY, NOVEMBER 2014



Ensuring reliable IM calculations

Ensuring reliable IM calculations

For larger sell-side institutions, such as Tier 1 banks, the need to validate IM calculations and make IM part of their liquidity risk management framework is growing fast.

Some of the very largest institutions have attempted to replicate CCPs’ IM calculations themselves through an in-house solution. However, with large banks being members of many CCPs, each with its own margin methodology, and with CCPs constantly adapting and evolving their methodologies, this approach has often proved costly and time-consuming.

For market participants it is vital to have a single point of entry for IM calculations, with a high reliability, availability and without the maintenance headache.

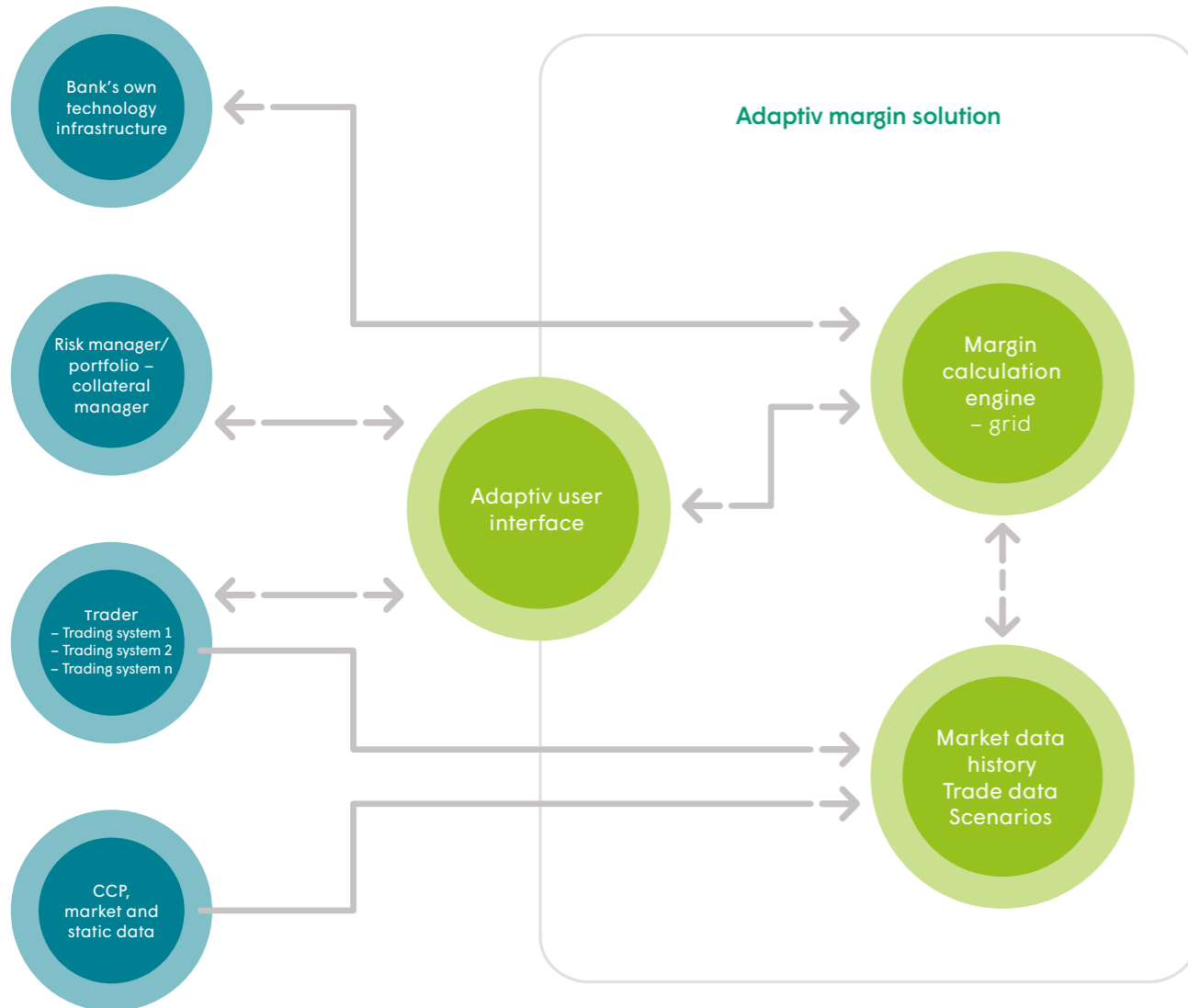
Managing liquidity risks

Subject as they are to changing positions and market environments, IM requirements create an additional liquidity risk for banks. Managing this liquidity risk is vital for internal risk management as well as external reporting, such as enterprise stress testing under, for example, the Federal Reserve Board’s Comprehensive Capital Analysis and Review (CCAR), and European Central Bank stress tests.



Managing liquidity risks

Figure 1: Adaptiv Initial Margin solution overview



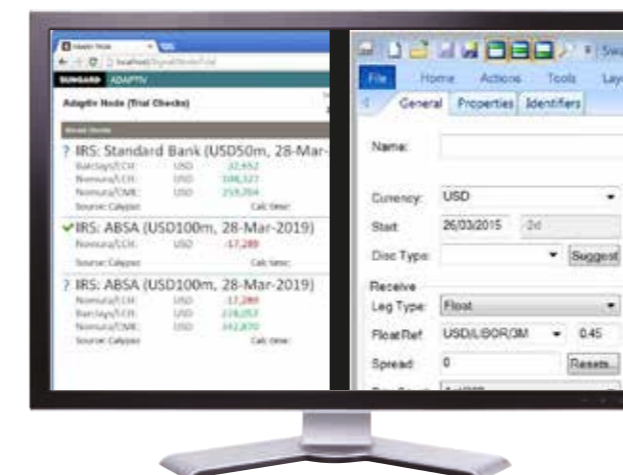
Adaptiv initial margin

FIS' Adaptiv IM helps financial institutions to proactively manage regulatory requirements by calculating, pricing and stressing IM on their behalf. Built on FIS' fast and flexible Adaptiv Analytics simulation and pricing engine, the solution delivers high-performance simulations. It is supported by FIS' well-established relationships with clearing houses around the world, establishing a rich coverage of traditional Standard Portfolio Analysis of Risk (SPAN) based IM methodologies to complement the VaR-based methodologies. The solution is component based, allowing it to be flexibly deployed in a variety of different environments, or integrated with other solutions such as FIS' Apex Collateral.

Adaptiv IM will replicate and report IM and VM on demand for each portfolio and, if required, perform stress tests.

Intraday trades can be submitted as what-if or committed trades. In either case the solution incrementally calculates and displays the marginal IM impact of the new trade. The solution provides a single point of entry for the bank for CCP and SIMM IM calculations and CCP eligibility criteria, meaning for what-if trades, incremental IM can be queried against all eligible CCP/FCM combinations and ranked to pick the cheapest option or, if non-mandatory, left un-cleared – based on lowest current, stressed IM or cost of funding IM. Committed trades will be placed against a specific CCP or FCM-client portfolio. The solution manages portfolios intraday to ensure that intraday checks are fully consistent with the current trading portfolio. Where applicable, the total IM can be compared against broker or CCP limits.

Adaptiv initial margin dashboard



The FIS IM solution can be provided as three modules or as a complete solution for the front-to-back analysis and management of IM:

IM replication engine

The standalone IM replication engine can be deployed in a wider infrastructure to be used for:

- Margin for non-cleared derivatives – SIMM (SBA) and schedule-based methodologies
- CCP methodology validation
- Fully configurable calculation request
- Partition results, for example between house trades and client trades or by desk for cost allocation purposes (incremental including allocation of portfolio effects and stand-alone calculations independent of the rest of the portfolio)
- Forward IM calculation
- Stress testing and scenarios analysis of IM
- IM sensitivities (for risk-based methodologies)
- Cross-margin optimization for some CCP methodologies (where offered by the CCP)
- Cost of IM
- Rich diagnostics into IM calculations

Further metrics such as cost of funding IM can be generated by the engine.

The solution accepts market data in the CCP format end-of-day and intraday. Clients can also provide their own market data at end of day and intraday. For VaR-based methodologies, trades can be sourced from CCP input messages or extracts files or through integration with front office booking systems. FpML supported by major CCPs is supported by the solution as a trade input format.

Complex portfolio methodologies can be supported together with relevant add-on methodologies such as for basis risk, liquidity, concentration risk and so forth. The Adaptiv Analytics extensibility framework empowers the user to build and modify models and methodologies.

IM pre-deal module

The pre-deal module allows front-office trading and sales to interact seamlessly with the IM replication engine. Perform pre-deal incremental IM from front-office trading systems to calculate a non-cleared IM under SIMM or determine whether a trade is eligible for clearing at a particular CCP, based on the full CCP criteria set. Stay up to date during the trading day with intraday updates based on cleared trade notifications from CCPs or real-time interface with trading systems. The pre-deal module provides a full audit trail maintaining all relevant information relating to the request. Where a CCP provides an API the FIS solution may use that where optimal.

IM portfolio analytics

The IM Portfolio Analytics solution allows large scale portfolio what-if IM analysis such as:

- Margin optimization across cleared and non-centrally cleared portfolios
- CCP optimization through analysis of what-if back to back trades across CCPs
- IM impact of trade additions, modifies or removals
- Drill-through to individual desk, book or trade contributions
- Detailed scenario-level diagnostic results

The solution is able to generate multiple output formats including: a rich graphical user interface (GUI), standard reports such as portfolio results, IM move explain, forward IM and IM sensitivities, an XML interface and native links to Microsoft Excel.

Supporting CCP methodologies

For exchange-traded derivatives, IM methodologies are implemented through the market-leading FIS GMS engine. The market for clearing OTC derivatives is still relatively new, with each CCP naturally developing its own modus operandi. Where the IM methodologies are made public or shared with clearing members or client clearing firms the methodologies are replicated, with bank's permission, using the Adaptiv market risk VaR engine. Over time it is expected that all CCPs will follow the key principles set out by ISDA on transparent risk management standards, practices and methodologies. With FIS maintaining methodologies on behalf of the clearing members and their clients, market participants can significantly reduce operational overheads, maintenance costs and risk.

Speed and flexibility

Supported and constantly updated by a team of more than 50 FIS developers, the Adaptiv calculation engine is designed at its core to be fast and scalable, making it ideal for pre-deal pricing and risk management. The engine is multi-core capable, vectorized for maximum performance and GPU capable in the latest release. It is also highly open and extensible, making it easy for FIS or clients to configure or customize new methodologies. FIS has an open source code policy for the Adaptiv models, allowing clients to implement changes to methodologies or develop their own methodologies as required.

Interfacing

Users can integrate with Adaptiv APIs directly, building bilateral interfaces between front-office and position keeping systems. This allows sales and trading desks to continue to use their existing systems, with the possibility of adding "IM metrics" to their pricing screens. Where bilateral real-time interfaces are too onerous to implement, a uni-directional interface can push trades to the IM Solution API and results of the checks are displayed through a personalized web portal. This gives traders the decision-making power they need with a low cost and risk implementation.

User interface

Alternatively, Adaptiv provides a lightweight trade-entry GUI for pre-deal IM pricing, for users that prefer to deploy a system rapidly without the IT costs of real-time trade integration. This solution will receive end-of-day trade positions in the overnight batch, but also allow intraday trades to be keyed into the Adaptiv IM solution. This represents a good solution for lower-volume trading platforms or environments or when direct analysis of trades is required.

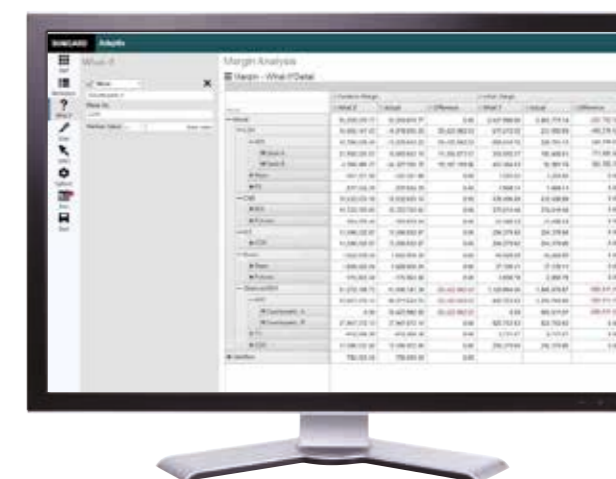
IM as part of risk at inception

Adaptiv IM is one module of a mature and powerful calculation engine that can also calculate pre-deal:

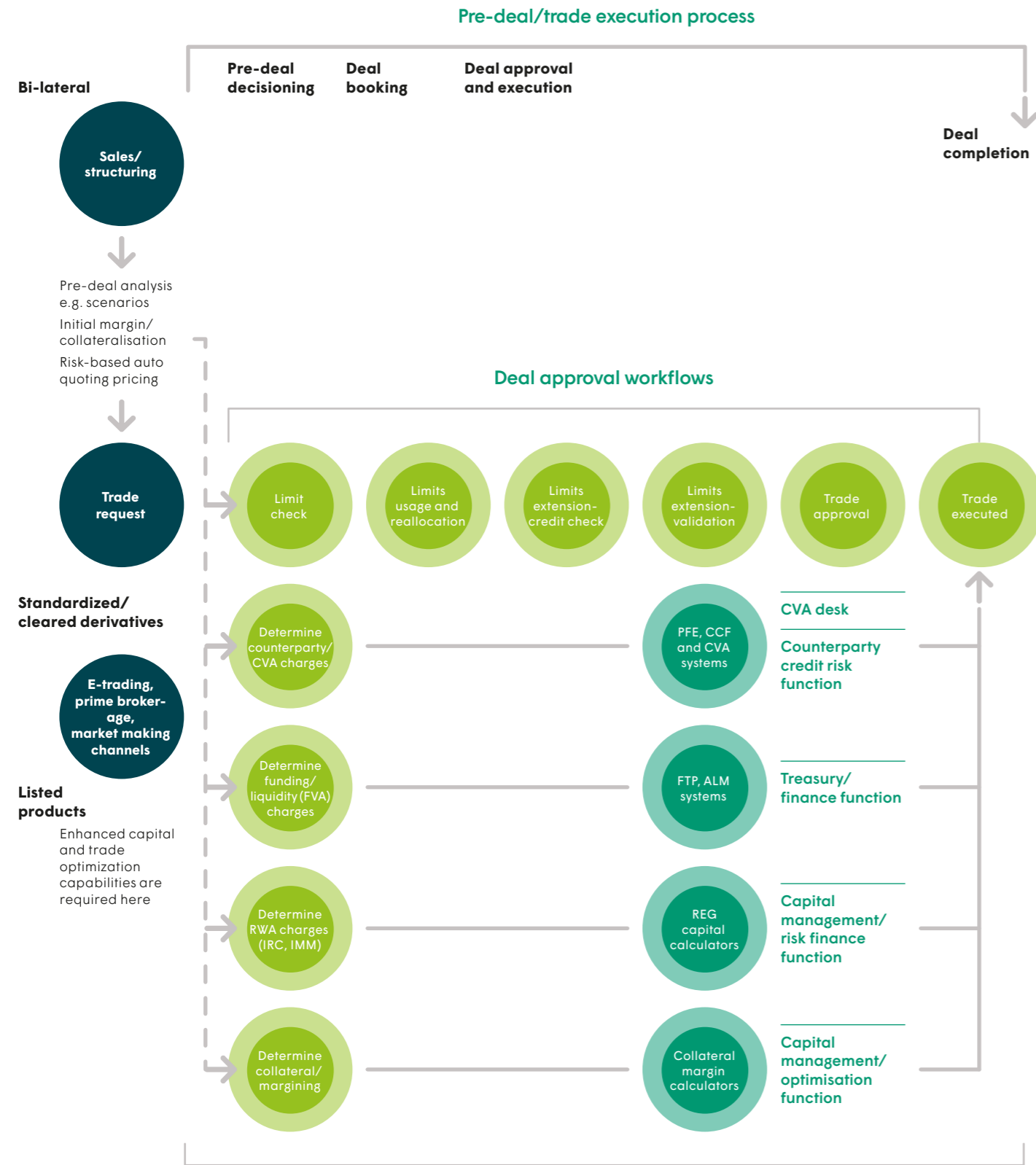
- Potential Future Exposure (PFE) for credit limit checking
- Credit Valuation Adjustment (CVA) and Debt Value Adjustment (DVA) charges
- Funding Value Adjustment (FVA) charges
- Risk Weighted Asset (RWA) amounts (customizable to include kVA)
- VM and IM requirements

With the obvious benefit of simplifying the system landscape, this powerful engine also facilitates combining traditional limit checking with the easy comparison of costs of trading – xVA and IM – within a unified framework.

Adaptiv initial margin dashboard



Solution Overview



Workflows, data, and systems are likely to vary by customer segment:
Banks, corporations, hedge funds, insurance/regulated funds, other dealers, government

About FIS' Adaptiv

FIS' Adaptiv provides enterprise-wide credit and market risk management and operations solutions for financial services institutions. Adaptiv assists institutions of varying size and complexity to deploy technology to meet both internal and regulatory requirements for risk management and operational control. Adaptiv helps financial services institutions from the banking, hedge fund, asset management, insurance and corporate sectors with its deep understanding of risk management and operational processes. For more information, visit www.fis.com/enterpriserisk

About FIS

FIS is a global leader in financial services technology, with a focus on retail and institutional banking, payments, asset and wealth management, risk and compliance, consulting and outsourcing solutions. Through the depth and breadth of our solutions portfolio, global capabilities and domain expertise, FIS serves more than 20,000 clients in over 130 countries. Headquartered in Jacksonville, Florida, FIS employs more than 55,000 people worldwide and holds leadership positions in payment processing, financial software and banking solutions. Providing software, services and outsourcing of the technology that empowers the financial world, FIS is a Fortune 500 company and is a member of Standard & Poor's 500® Index. For more information about FIS, visit www.fisglobal.com



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