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ECOFIN MODM
MIDDLE OFFICE DATA MODEL

modm

SOLUTIONS FOR THE
FINANCIAL INDUSTRY

fidm

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MIDDLE OFFICE DATA MODEL

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1 modm overview

MODM: POSITIONS AND TRANSACTIONS DATA

MODM is a fully developed, ready-to-use data model enabling financial institutions to maintain a complete overview of all financial positions and transactions as well as of compliance with regulatory, in-house and customer requirements. This information is available for decision making, back office, reporting and accounting.

MODM identifies the invariant building blocks of positions and transactions. This keeps the model stable in a changing environment, easy to understand and easy to extend at the same time.

Using MODM not only reduces project risk, but also reduces costs and time to market. It also frees valuable resources from general analysis work and makes them available for revenue generating activities.

MODM is designed to provide a financial institution with the necessary data for

- Performing all tasks in connection with the process of investing and trading in financial instruments: decision making, order management and routing, position keeping (general ledger and auxiliary books), collecting fees, commissions and taxes and reporting
- Performing all tasks in connection with corporate actions and with the administration of financial instruments positions
- Maintaining a complete overview over all financial transactions and positions as well as
- Complying with rules set up by regulatory bodies, internal rules and instructions of the customers

MODM can be implemented as is or with individual modifications. MODM is not only a fully fledged data model, but also incorporates a number of valuable concepts, components and details, making it ideal for use as a reference for internal modeling efforts.

MODM is represented in UML and comes with a comprehensive documentation. Its data dictionary is available in XMI format for loading into standard tools.

WHY MODM? THE IMPORTANCE OF THOROUGHLY STRUCTURED DATA

It is undisputed that the quality of data is crucial for automating processes in the financial industry. But, data alone is not sufficient, however high the quality. Data needs to be stored in a meaningful structure in order to fully exploit its value.

- Making full use of data requires all data items to be clearly and consistently defined. The definitions need to be documented in such a way that every user can understand the meaning and the importance of each item.

- Only properly structured data enables financial institutions to automate all tasks in connection with pricing, trading, corporate actions processing and reporting, thereby reducing operating costs and mitigating operational and reputational risks.

- Scrubbing, cleansing and checking data beyond obvious formatting failures is only possible for clearly defined data items with likewise clearly defined relationships to other data items.

- Consolidating data from different sources requires mapping onto a common structure on which all applications can operate uniformly.

For all these reasons it is not just data that matters, but structuring data properly. A sound data model is the key to automation and straight through processing (STP) – in the financial industry and elsewhere.

Building a data structure appropriate for the various needs of a financial institution is a long and costly process. It requires setting the right scope, analyzing the data items to be stored and their different uses as well as defining principles of modeling, which keep the data structure stable over time, readable and understandable and finally extensible.

MODM is a comprehensive solution to this formidable task in the area of positions and transactions in financial instruments and other assets consisting of more than 2500 consistent and redundancy-free data definitions including all relevant relationships.

2 structure matters

STRATEGIC ADVANTAGES

MODM's comprehensiveness, high level of detail and thorough structure bring about a number of strategic and competitive advantages in terms of risk mitigation, cost reduction and timeliness of services.

ENABLE PROCESSES TO BE AUTOMATED (STRAIGHT THROUGH PROCESSING, STP)

MODM's comprehensiveness and design enable straight through processing in all areas of trading and corporate actions with a number of highly desirable consequences:

- Lower direct operating costs
- Mitigated operational risk
- Shorter processing times and shorter required lead times
- Enhanced service quality
- Reduced processing failure thereby avoiding the associated costs of correction and loss of reputation

OPEN UP NEW OPPORTUNITIES

MODM's unified approach to all position related information facilitates dealing with instruments and transactions never dealt with before, thereby

- Opening up new business opportunities
- Increasing overall operational agility

ENSURE THAT ALWAYS INCREASING REGULATORY REPORTING REQUIREMENTS ARE MET

MODM in connection with FIDM® enables financial institutions to meet all current and upcoming regulatory reporting requirements with ease. The level of detail MODM provides is always ahead of the level of detail required by regulators.

SAVE PROJECT TIME AND COSTS

MODM is comprehensive, it is thoroughly structured and – it's already there. This results in lower project costs, mitigated project risk – especially in the highly critical modeling phase – and shorter time to market.

Using MODM also reduces the need for domain analysis in the area of positions and transactions, freeing up valuable resources for revenue generating tasks.

These advantages do not only hold for an initial database project but also for subsequent application development.

strategic advantages 3

MODM DESIGN ADVANTAGES

KEEPING THE ORIGINAL INFORMATION

MODM keeps as much of the original information on transactions as possible. Storing pre-processed data is avoided. This has a number of advantages:

- The same data can be used under different accounting schemes.
- It is easy to identify and correct faulty transactions.
- Former transactions can easily be investigated.

ORDER TRACKING

MODM is able to track the progress of order execution in different ways according to the preference of the respective financial institution:

- Postings of orders as soon as they have been executed. The process is followed by updating the status.
- Individual postings to positions reserved for the specific state of order execution for each step in the execution process (e.g. pending orders, positions due, positions overdue etc.).

COVERING ALL TYPES OF ACCOUNTING PRINCIPLES

MODM is designed to meet the need of different accounting principles in parallel. The recording of original cash flows and instrument transfers is practically identical under all accounting rules. As long as only this information is stored according to MODM, no specific rules have to be observed.

For any level of aggregation it is possible to define all positions and postings with respect to a specific accounting principle (e.g. US-GAAP and IFRS). Different position and account hierarchies can be maintained in parallel.

PREDEFINED TYPES OF SERVICES

MODM allows you to predefine the types of services (account types, order types, posting types etc.) permitted for specific groups of clients. Types serve as templates. It is possible to deny deviations from the predefined properties in individual cases for specific types of services.

This is key to automating processes and minimizes costly manual work, risk of failures and consequently reputational risk.

MODM AS PART OF AN OVERALL DATA ARCHITECTURE

MODM is part of an overall data architecture. It relies on modeling of the involved parties and of financial instruments in other data models. There is no absolute need for a specific data model. MODM just relies on the following structures:

- There is a single class describing all involved parties.
- There is a single class describing all financial instruments.

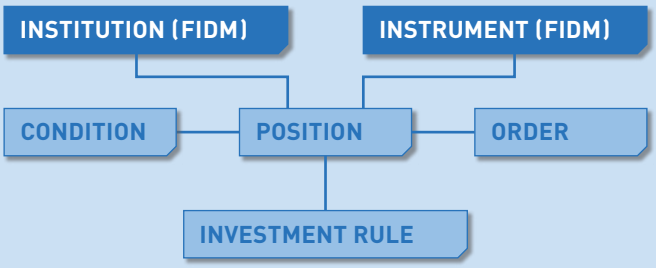
MODM in its standard form is built to be compatible with the Financial Instruments Data Model (FIDM®) supplied by ECOFIN Data Model AG, Davos, Switzerland. This model extensively covers financial instruments, but also involved parties in sufficient detail for the purposes of MODM.

Both MODM and FIDM® share the same level of detail, identical modeling techniques and principles. Both models can be delivered together as an integrated data model. They are part of the ECOFIN FINSUITE family of data management solutions, which also comprises data loaders from various feeds and other sources as well as data warehouse solutions.

The relationship to FIDM® is reflected in several links to specific FIDM® classes, which must be replaced if a different model is used for financial instruments and/or involved parties.

4 design advantages

5 building blocks



MODM BUILDING BLOCKS

OVERVIEW

MODM describes all the data needed for maintaining a complete overview over all financial transactions and positions as well as for complying with rules set by regulatory bodies, internal rules and instructions of the customers. The scope of data is chosen to achieve this purpose.

MODM consists of the following sections ("packages" in UML terminology):

- Involved parties
- Financial instruments and other assets
- Positions
- Transactions
- Conditions
- Investment rules

The level of detail is chosen to comply with all requirements of front office, back office, reporting and accounting including Basel II, Sarbanes Oxley and other regulatory requirements. MODM is also compliant with FpML and Swift ISO 15022 standards.

MODM relies on FIDM® in two areas:

- Involved parties (institutions and individuals)
- Financial instruments

Implementing MODM together with FIDM® is therefore highly recommended. However, MODM can be implemented without FIDM®, if a different model of financial instruments and involved parties is available.

INVOLVED PARTIES (FIDM)

For all involved parties basic data such as names, birth dates or foundation dates, relationships to other parties, domicile, addresses, internal and external identifications are modeled in FIDM®. MODM contains additional information on counterparties including history of defaults, history of contacts.

FINANCIAL INSTRUMENTS (FIDM) AND OTHER ASSETS

To maintain a complete overview over financial positions and assess their associated risks, all assets in which positions are held and transactions can be made need to be known in detail. Most of these assets are financial instruments, which are modeled by FIDM®.

MODM describes additional assets which are not financial instruments but are nevertheless important for obtaining a complete picture of the financial situation. These assets constitute a large part of a customer's wealth influencing diversification and risk assessment, serve as collateral for credits (e.g. real estate, vehicles) or influence financial planning (e.g. insurance contracts).

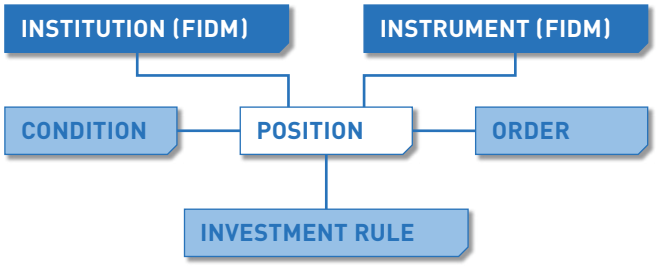
POSITIONS

MODM breaks down the portfolio of any party into the individual balances in specific assets. Such a balance is called an "elementary position" in MODM. Elementary positions are part of a hierarchical structure and of other relationships. All elements of such static structures larger than an individual position in a specific asset are called "aggregate positions". Each of the aggregate positions can be part of further positions in the same way as elementary positions.

The most important types of aggregate positions are accounts and securities deposits. It is possible to keep multiple hierarchies based on the same elementary or aggregate positions. The types of positions can be defined and individual positions can be assigned to them. This allows you to set up a rule based accounting system.

Changes to positions are made by postings. MODM describes postings using the following elements:

- Generally applicable posting rules. The necessary rules for all postings can be defined in MODM. Multiple accounting systems can be defined in parallel.
- Specific posting instructions from counterparties.
- Individual postings.



TRANSACTIONS

Like positions, the permitted transaction types can be defined for orders and actual orders and transactions can be assigned to one of these types. Transaction types can be related to business events which trigger one or more types of orders either sequentially or alternatively. On the other hand the postings required for processing the transaction can be defined in advance.

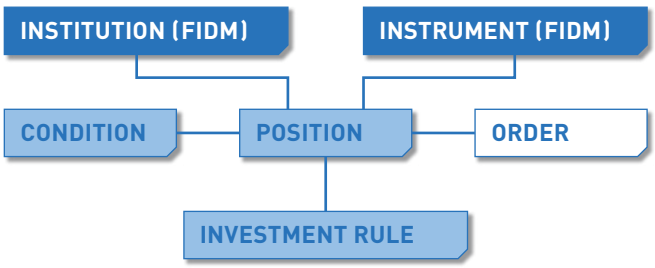
MODM describes transactions using the following elements:

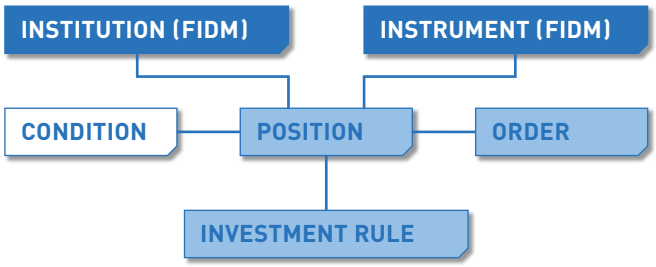
- Origin or trigger of orders/transactions:
  In MODM each transaction is initiated by an order and each order has a reason, which can be referenced. For example in processing corporate actions all transactions reference the original corporate action.

- Basic order/transaction types:
  Trading orders and settlement orders (payment and delivery) are differentiated. An execution of a trading order necessarily results in one or more settlement orders.

- Structured orders:
  In many cases orders are structured initially (combination of instruments to be bought or sold, same transaction for multiple accounts). In other cases transactions are structured during the execution process, e.g. partial executions, reversals and rectifications.

MODM provides a flexible structure keeping the original order as a root and linking each partial or consequential order emerging during the execution process to it.





CONDITIONS

Conditions consist of a variety of rules applying to the services offered. In MODM conditions can vary between different entities of the financial institution (departments, branches, subsidiaries) and different groups of counterparties. They have contractual aspects and financial aspects.

Standard contracts (General Terms and Conditions) are the types from which individual contracts are derived. However, some contracts only exist as individual contracts.

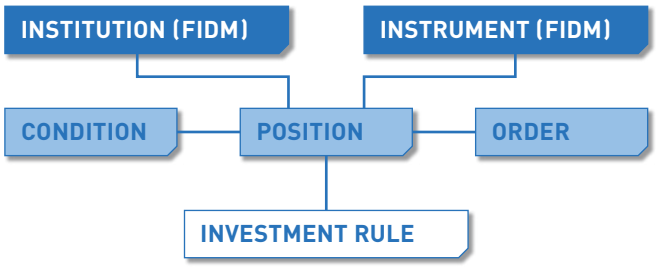
On the financial side fees, commissions, taxes etc. are levied or passed through for specific services in a specific context. MODM supports very complex definitions.

The calculation of fees, commissions, taxes etc. is triggered either by a transaction or by a specific date. MODM provides the structure for triggering the application of conditions, calculating the amount and posting the result.

INVESTMENT RULES

MODM allows a wide variety of investment rules to be defined in order to enable automatic verification of compliance.

In MODM investment rules assign upper and lower boundaries to parts of a portfolio and to a specific type of investment. In addition a benchmark can be defined for each portfolio as well as the investment style or the rules for setting up the portfolio initially.



MODM PRODUCT PACKAGE

COMPREHENSIVE DOCUMENTATION

The MODM product package includes a comprehensive User Manual and a Data Dictionary, in both CD-ROM and hard copy forms, as well as detailed class diagrams.

A conceptual product is only as useful as its documentation. Special effort has therefore been made to provide precise, structured documentation of high quality. Besides stating all definitions, design concepts are described in a clear and comprehensive fashion. All MODM users, from database specialists to software or business analysts, will discover that the documentation provides a solid basis for understanding the structure and use of the model in depth.

FIDM® is expressed using the industry standard for the modeling and specification of software systems UML™ (Unified Modeling Language™), defined and maintained by the Object Modeling Group™ (OMG™, http://www.omg.org/uml).

USER MANUAL

Comprehensive, in-depth explanations of every aspect of MODM are provided in the 600-page User Manual. Two volumes set out the building-block design principles, their foundation in theory of finance and the data modeling methodology. The classes, attributes and relationships that form the framework of MODM, are defined in detail. The usage of each item is described and illustrated both with drawings and with numerous concrete examples.

DATA DICTIONARY

Precise definitions of all the elements of MODM are supplied in the 600-page Data Dictionary, which is provided both in electronic and in hard-copy form. The electronic version in the form of HTML documents can be viewed with any Internet browser and allows easy navigation through the model's 270 classes, 730 attributes, 900 domain values and 540 relationships.

UML DIAGRAM

A large MODM poster gives a detailed overview of all classes, relationships and cardinalities in the model.

XMI VERSION

MODM is available in XMI format to be imported into XMI enabled tools and into database management systems. No time consuming and failure prone typing is required for creating a database based on MODM.

product package 6

TRAINING AND CONSULTING

ECOFIN provides training courses for all professionals involved in MODM projects, from the implementation team to senior management.

The introductory course is presented in two parts: The first course covers the principles of data modeling in general as well as the design concepts used by MODM. Using this basis, the structure of MODM is explained in detail. After the client's staff has gained some experience working with MODM, the second part of the training deals with the specific principles and the solutions provided by MODM using hands-on examples drawn from the client's specific questions and problems.

ECOFIN also offers customized training programs. Depending on the particular needs of the client, special aspects of financial modeling, implementation and project management issues will be addressed.

ECOFIN is one of the leading experts in the implementation of risk and portfolio management concepts in financial institutions. Its consulting team provides clients with assistance at all stages of implementation of MODM. ECOFIN can also assist in the development of software applications aimed at meeting specific customer requirements.

7 training and consulting

ADDITIONAL INFORMATION

Additional information on MODM is available from ECOFIN.
Please address your questions to the contact indicated below.

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For additional information on FIDM® and other ECOFIN FINSUITE data management solutions please visit:

www.ecofin.ch/fidm
www.ecofin.ch/finsuite

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