ECOFIN FIDM

FINANCIAL INSTRUMENTS
DATA MODEL

fidm

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1 fidm overview

FIDM: REFERENCE AND CORPORATE ACTIONS DATA

FIDM® is a fully developed data model that allows for the description and representation of all types of financial instruments, including all types of derivatives and structured products. FIDM® is a concept for structuring securities reference data, corporate actions and pricing information. It is thus the basis to automate all tasks in the area of financial instruments processing, pricing and reporting. It provides a comprehensive, consistent, mature and solid basis for developing databases and applications for banks, data vendors, stock markets, clearing houses and other financial institutions. Using FIDM® reduces the need to involve internal or external know-how and expertise, which is often difficult to access, and reduces development costs and project risks considerably.

FIDM® identifies the invariant building blocks of financial instruments from a user perspective. Each building block describes a specific subject. Since most of the innovation in the design of financial instruments takes place in the combination of known building blocks and less in the invention of new building blocks, this approach is key to keeping the model stable in a highly dynamic environment. At the same time it makes the model easy to understand and to extend, if necessary.

FIDM® is designed to provide a financial institution with the necessary data for performing all tasks in connection with financial instruments:

– Decision making
– Trading
– Processing corporate actions
– Pricing
– Regulatory, internal and client reporting

Experts in information technology and financial economics spent 15 years in collaboration with leading global financial institutions developing a model with the comprehensive detail needed to support pricing, management and administration of securities and securities portfolios. As a result, FIDM® is unique in design and clearly defined in scope.

Today, leading institutions rely on FIDM® as they successfully compete in today's global markets. Each financial institution has its particularities, which are part of its intellectual property and which contribute to its competitive advantage. Since FIDM® has a clear-cut structure, it is easy to extend and to adapt to the needs of an individual financial institution.

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

WHY FIDM? 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.

FIDM® is a comprehensive solution to this formidable task in the area of financial instruments consisting of more than 2 800 consistent and redundancy-free data definitions including all relevant relationships.

structure
matters
2

STRATEGIC ADVANTAGES

FIDM®'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)

FIDM®'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

FIDM®'s unified approach facilitates dealing with instruments never dealt with before, thereby

– Opening up new business opportunities
– Increasing overall operational agility

ENSURE THAT ALWAYS INCREASING REGULATORY REPORTING REQUIREMENTS ARE MET

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

SAVE THE COSTS OF ACQUIRING AND MAINTAINING DATA

FIDM®'s comprehensiveness enables financial institutions to centralize data acquisition and maintenance thereby lowering acquisition costs and eliminating inefficiencies created by redundant and inconsistent data.

SAVE PROJECT TIME AND COSTS

FIDM® 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 FIDM® also reduces the need for domain analysis in the area of financial instruments, 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

FIDM DESIGN ADVANTAGES

CLEARLY DEFINED SCOPE

The scope of FIDM® is clearly set to cover financial instruments and only financial instruments. All additional information (e.g. on the companies involved) is limited to what is required for understanding financial instruments.

UNIFIED APPROACH TO ALL FINANCIAL INSTRUMENTS

FIDM® treats every instrument as a bundle of claims or cash flows, which in turn are combinations of a few basic payoff functions. These are the most important building blocks of financial instruments.

In general, FIDM® is designed around the constituent building blocks of financial instruments. Each building block contains data describing a particular subject area. Thus, in FIDM®, what belongs together is found in one place. These building blocks are needed for all types of applications from valuation to reporting to processing. Structuring data in this way is key to the stability of the model and an indispensable prerequisite for automating processes, saving costs and mitigating risks by straight through processing (STP).

Defining any financial instrument, even those not yet invented, is then simply a matter of determining its building blocks and combining them appropriately.

CORPORATE ACTIONS: THE LIFE CYCLE OF FINANCIAL INSTRUMENTS

FIDM® models the entire life cycle of financial instruments and permits every bit of information to be traced through its previous states.

The ordinary life cycles of most financial instruments are defined by the sequence of rights or cash flows as specified at issue. For example, bonds are issued at some time, pay interest on some dates and are finally paid back, or they may be called or converted into other instruments.

FIDM® also models changes to the instrument definition as a result of environmental changes not known at issue, such as splits or take-overs. Such events can only be recorded when the event is announced and are modeled together with all their consequences including not only the ones for the instruments and institutions directly involved, but also the ones for indirectly involved derivatives requiring changes in exercise price or contract size.
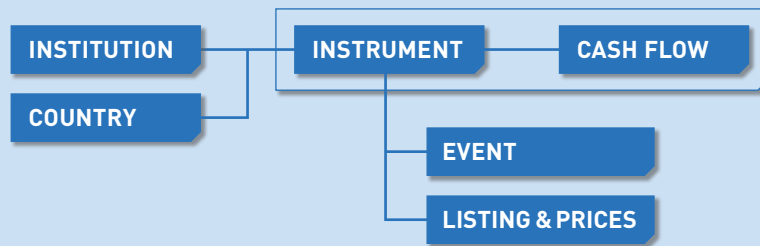
IDENTIFICATION AND CLASSIFICATION

All identifications of objects according to identification schemes used by numbering agencies, data vendors, exchanges etc., can be kept in parallel.

Multiple, flexible classification schemes can be set up to meet processing, regulatory, accounting or statistical needs.

design advantages 4

5 building blocks

FIDM BUILDING BLOCKS

The FIDM® covers the following subject areas:

FINANCIAL INSTRUMENTS

Basic data on financial instruments (e.g. name, unit, capital, issuing conditions etc.).

CASH FLOWS

Rights and cash flows connected to financial instruments (interest payments, dividends, principal payments, option rights, call and put features, conversion rights etc.) that are part of the initial definition of the instrument.

INSTITUTIONS

Institutions playing a role in connection with financial instruments (issuers and guarantors, lead managers, payment agents etc.).

EVENTS

Events (mainly voluntary) that change financial instruments and/or the institutions issuing them (secondary equity offers, mergers, spin-offs etc.), which were not part of the initial definition of the instrument.

LISTINGS AND QUOTES

Information on the markets where the respective instrument is traded (listings, trading practices, prices of financial instruments etc.).

COUNTRIES AND REGIONS

Reference data for the instruments (countries, languages, currencies, important legal information).

Following the UML convention, these FIDM® subject areas are called "packages".

FINANCIAL INSTRUMENTS

Some important properties of financial instruments apply to all types of financial instruments from conventional stocks and bonds, through commodities, indices, interest rates and baskets, to the newest and most complex derivatives and are therefore modeled uniformly in the instrument area or instrument package. The instrument package is the heart of FIDM®. More specific properties, such as cash flows, involved institutions, markets, corporate actions and other data are modeled separately and linked to the instrument's basic description.

General properties include the name, market identifiers, nominal value, capitalization and maturity. The rules governing the composition of structured instruments such as baskets, bonds with attached warrants and indices are also part of this section. But also less stringent relationships among instruments, such as the dependencies between "American Depository Receipts" (ADRs) and their original shares, are equally provided for.

INSTITUTION		INSTRUMENT		CASH FLOW
COUNTRY				
		EVENT		
		LISTING & PRICES		
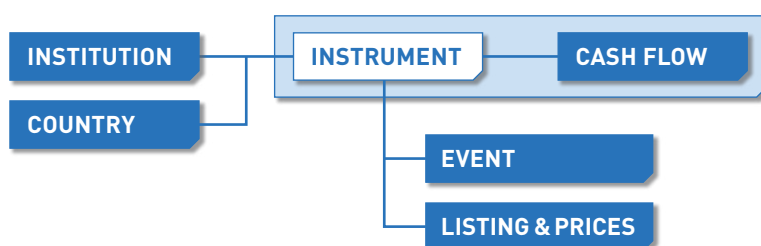
CASH FLOWS

KERNEL OF UNBUNDLING

FIDM® represents every financial instrument as a bundle of claims. These claims, such as the right to receive dividends or to transfer, exchange or purchase instruments, as in option rights, are regarded as "cash flows". With its unbundling approach, FIDM® models cash flows independently of the respective instrument type. FIDM® draws on modern financial theory to provide the data necessary to determine each of these cash flows. This gives FIDM® the flexibility to describe any conceivable financial instrument, even those not yet invented.

The key to FIDM®'s unique unbundling approach is the definition of a small number of payoff functions that can be used to represent all sorts of different payments, with or without contingencies. The definitions of these payoff functions are derived from the theory of finance and are constant over time. Complex payoff structures, which characterize a financial instrument and determine the amount of a single cash flow, are described as combinations of these payoff functions. Thus the claims associated with a financial instrument are treated as a finite set of a small number of elementary payoff functions.

FEATURES OF CASH FLOWS

Cash flows based on other instruments, e.g. of options or of bonds with variable interest rates, directly refer to the underlying instruments. Extensive detail allows for the treatment of simple or complex fixing rules for settlement prices or exercise prices. The price for underlying instruments such as baskets can be precisely determined and the rules for path-dependent exercise prices for "look-back options" can be accurately described.

In addition, the cash flow area contains information about important dates and notice periods. For settlement purposes, the physical form, status of the cash flows and effective payment amounts are included. And finally, special conditions, such as barriers or currency options with either fixed or flexible exchange rates are also provided for.

Cash flows – especially their payoff functions – need to be adapted if the underlying undergoes a major change such as a split, currency conversion or if it ceases to exist as a consequence of a takeover. These changes are represented so that the states before and after the event are always visible in the database.
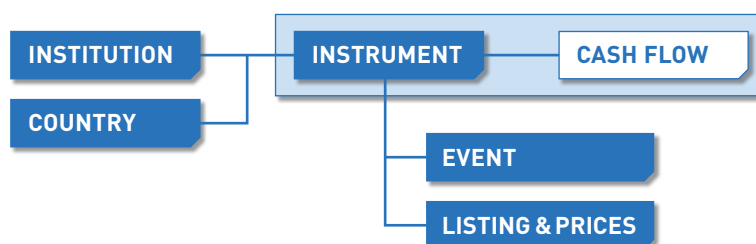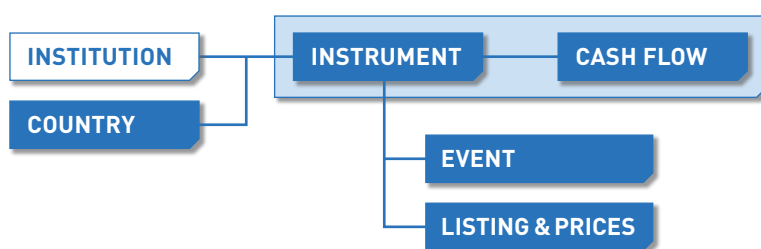
INSTITUTIONS

Among the most important features of financial instruments are their issuers and guarantors. There are other institutions too, playing important roles in connection with financial instruments such as rating agencies or payment agents. FIDM® provides for a separate description of each institution relevant to an instrument. In addition, its role is described with respect to each instrument, such as guarantor, custodian or rating agency. Basic information includes the institution's identification, legal form and domicile. Data about general meetings such as date, type and requirements for participation, are also covered.

In addition, details may be given for companies with more complex structures, such as a network of branches or subsidiaries. This facilitates the tracking of securities issued by related companies. Industry and sector membership is provided for using various systems of classification. A comprehensive coverage of ratings for institutions or their financial instruments is possible.

EVENTS

Any financial instrument may be affected by extraordinary events during the course of its life. Events such as splits, capital increases or takeovers are defined by FIDM® to be "corporate actions". The information concerning corporate actions is an important component of the data describing financial instruments.

Using its key concepts, unbundling and exchange of instruments, FIDM® describes the exact circumstances of each event, the resulting effects on every instrument involved and the consequences for the corporate structure of the institutions participating in the action. Complex sequences of events, such as a takeover bid followed by a merger and capital restructuring of the companies involved, can be fully described.

The level of detail provided by FIDM® is designed to allow portfolios containing the instruments affected to be updated automatically. FIDM® describes all the information needed to calculate the event's effects on prices, portfolios and indices. Back office operations are also fully supported. Data structured in FIDM® can be used by applications to automatically inform holders of the financial instrument about the event's impact on their portfolios as well as on their available options.
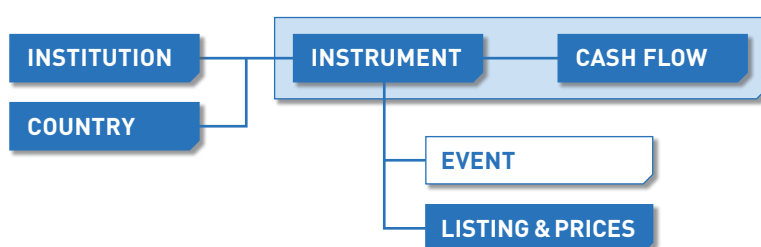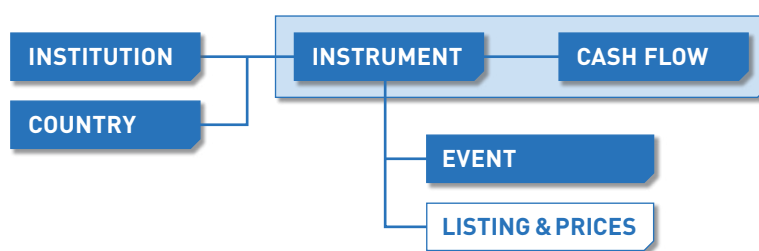
LISTINGS AND PRICES

Trading in financial instruments may take place on official exchanges or on other trading systems. FIDM® makes use of a broad definition of "market places" to include information from all sources; multiple listings are supported.

Information from all sources that concern officially or unofficially listed securities is maintained, together with the special notations necessary to correctly interpret price data. Important trading practices such as trading lots, minimum price changes, spot or forward settlements and trading calendars are also incorporated in FIDM®.

As securities may have different types of quotes and prices at different market places, FIDM® maintains all quotation types, where necessary, separately by contributor and by vendor. It is an easy matter to define a time series for quotes as well as supply and demand curves for individual instruments for any single contributor – one of FIDM®'s many specialties.

COUNTRIES AND REGIONS

Every company that issues a financial instrument is associated with the country in which it is domiciled. Countries serve as a geographical or political reference for currencies and institutions. Furthermore, particular legislative policies that affect financial instruments, such as legal forms of companies, taxes and sales restrictions, are also country-dependent.

To facilitate portfolio analysis, countries may additionally be grouped into regions, such as Latin America, or into organizations, such as the OECD or NAFTA. Further classifications might be based upon political treaties or alliances, languages, currencies, etc.

Countries that play an active role in the financial markets as issuers or guarantors of financial instruments, are cross-represented as institutions.
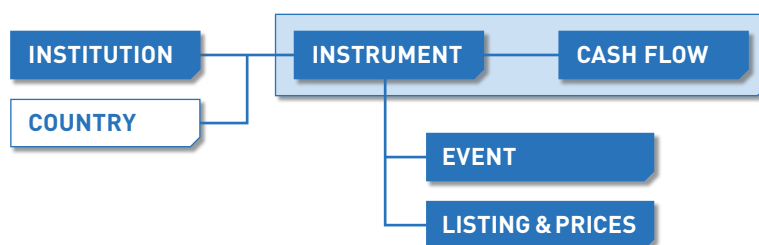
FIDM PRODUCT PACKAGE

COMPREHENSIVE DOCUMENTATION

The FIDM® 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 FIDM® 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 currently available in either English or German.

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 FIDM® are provided in the 1100-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 FIDM®, 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 FIDM® are supplied in the 800-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 300 classes, 1300 attributes, 1250 domain values and 450 relationships.

UML DIAGRAMS

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

XMI VERSION

FIDM® 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 FIDM®.

product
package 6

TRAINING AND CONSULTING

ECOFIN provides training courses for all professionals involved in FIDM® 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 FIDM®. Using this basis, the structure of FIDM® is explained in detail. After the client's staff has gained some experience working with FIDM®, the second part of the training deals with the specific principles and the solutions provided by FIDM® 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 FIDM®. ECOFIN can also assist in the development of software applications aimed at meeting specific customer requirements.

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ADDITIONAL INFORMATION

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

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