Case Study

Eurex Repo

Rule-based Master Data Management

Summary

In 2015, Eurex Repo, one of the leading electronic vendors for secured financing transactions, introduced a new trading platform which relies on a central, rule-based master data management system.

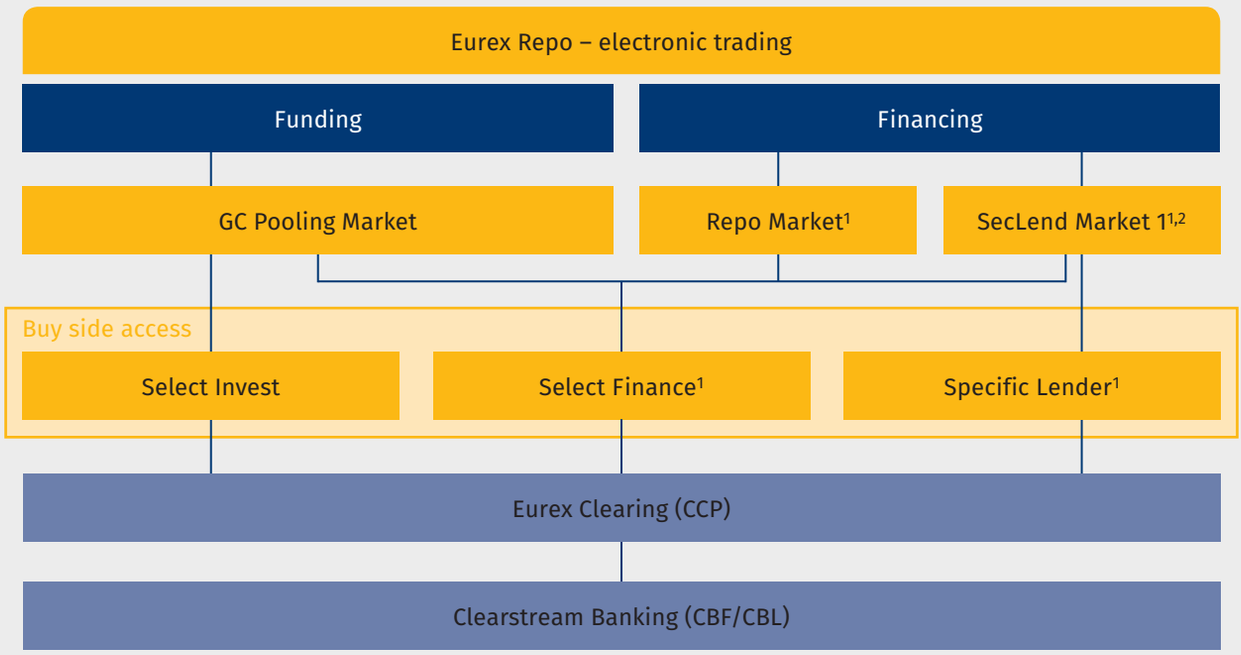
With the support of STABILIT, a specialist in the area of rule-based data maintenance, Eurex Repo largely automated its master data management, improved data quality significantly and achieved maximum flexibility in the dynamic financial market.

As a part of the Deutsche Börse Group, Eurex Repo is one of the leading providers of international financing in the secured money market business (repo and securities lending). This continuously growing marketplace with high liquidity combines state-of-the-art electronic trading with the efficiency and security of clearing as well as collateral management and settlement for secured funding and financing transactions. Currently, more than 150 European financial institutions are active in the following markets: GC Pooling® Market, Repo Market, eTriParty Repo Market and SecLend Market.

ACTICO:
Mr. Hartmann, can you give us a brief insight into your business?

Hartmann:
Eurex Repo is a leading provider of secured transactions in the area of funding and financing. Our offer is aimed not only at the repo market, but also increasingly at the market for securities lending. In addition to our "classic" customers on the sell side (banks, intermediaries, financial agencies and supranational organizations), we also offer our trading markets on the buy side (corporations, pension funds, asset managers and insurance companies). At Eurex Repo, we offer these markets an electronic marketplace, covering the entire value chain as an integral part. This means that our solution portfolio extends from trading and clearing to settlement.

ACTICO:
As Head of Market Operations & Functional Design at Eurex Repo, you know what moves the market. What challenges do you face?



[1] Settlement also via Euroclear Bank [2] Home market settlement for equity loans
Architecture of the electronic market place. Source: Eurex Repo

Hartmann:
The financial sector is changing and we have to face these challenges. On the one hand, there are the economic challenges. The volumes in the repo market have declined, which is mainly due to the borrowing program of the European Central Bank. Similarly, the negative interest rates of the central banks are not conducive to our business. With the expansion of our business area to securities lending and the buy side, as mentioned in the previous question, we are responding to the challenges of ensuring the continuous growth of our market place. On the other hand, we are currently working intensively on the examination of regulatory requirements (including MiFID II) and their impact on our business, as well as the practical implementation. Our new trading platform has also helped us meet business challenges because we have become much more cost-effective internally and have also allowed our customers to benefit from cost savings since, with the web-based solution, installation and updates on the part of the customer are no longer required.

ACTICO:
You talk about the new "F7" trading platform of Eurex Repo. In your own words, can you describe the trading platform, what happens on it and who ultimately uses it?

Hartmann:
F7 is our web-based trading platform. It is used by about 150 international market participants and currently has about 1,500 users. It supports the trading of secured funding and financing transactions in various markets and segments, with our most important market being the so-called GC Pooling® market. These are money-driven, collateralized repo transactions in which a market participant lends money for a certain period and provides the counterparty with appropriate collateral for the duration. These market participants (in other words, our customers) place offers on the trading platform, on both the buy and the sell side. If an offer is accepted by a market participant – in this case, we are talking about a "hit" – the actual trading takes place. The transaction is sent to the central counterparty, the clearing house, and settlement takes place on the settlement day. Eurex Repo provides the trading infrastructure and, thus, is the business intermediary.

ACTICO:
Can you give us some facts and figures regarding the trading volume of your platform?

Hartmann:
At the moment, we manage four markets with several sub-segments on the trading platform, 94 Baskets and about 35,0000 securities. The volume outstanding is at a peak of between EUR 140 billion and EUR 150 billion, with a record high of EUR 250 billion in June 2014.

ACTICO:
The F7 trading platform basically consists of two parts: the upstream, rule-based master data management system and the actual trading platform, the trading system. What role does master data management have?

Hartmann:
Master data management is very important: If this system does not provide data, the trading system basically has no

data basis. Master data management is therefore a central system for us: not only are securities managed here, but also the users, legal entities as well as all contract types. All basic master data that we need for trading come from the master data management system. They are sent to the trading system every trading day, so that the latest data is available to our customers the next day.

Traber:
To expand on that: The metaphor of a "cockpit" seems appropriate for the master data management system. To a large extent, it has a control function and serves the preparation of all static data, such as securities, market participants or markets. However, the configuration of a market model is also possible to a certain extent.

Hartmann:
The aim of the project was to develop a flexible system that allows us to relatively quickly set up a new segment, compile new baskets, introduce new currencies or create new customer groups – all this should be possible without complex software releases. We have achieved this, as well.

ACTICO:
What does the basic preparation process in master data management generally look like?

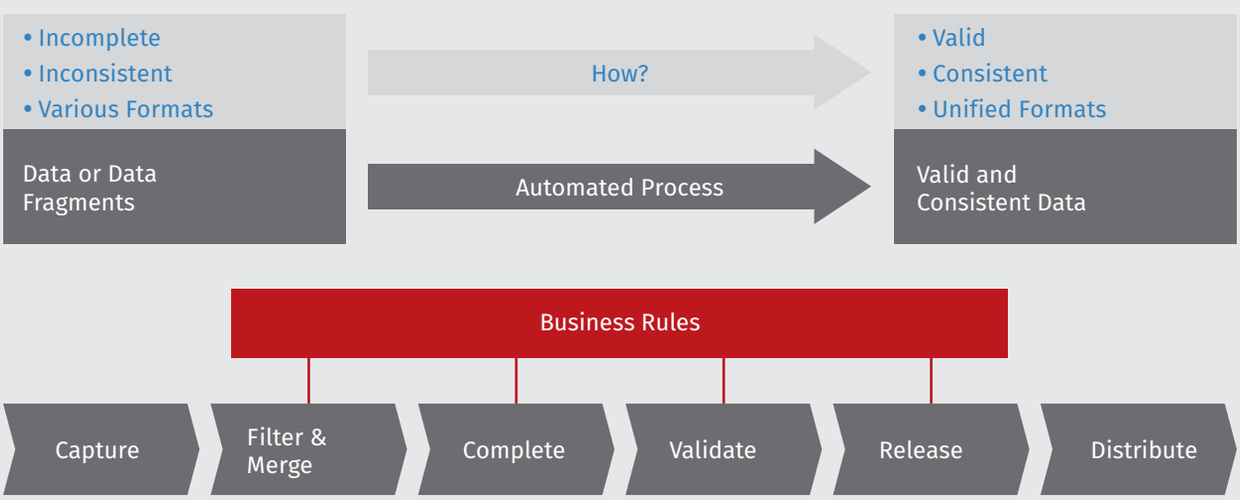
Traber:
Basically, the data is subject to a continuous preparation process. It runs in a rule-based manner and is triggered as soon as we process an external data source (ECB[3] and SNB[4]) and receive it in the system. In the preparation process, the data passes through a maturity process over various stages: *initial*, *valid*, and *released*. There can also be more stages, though. As a result, new data are created, existing data are enriched, or entire data sets are deleted. The goal is to get as much data as possible into the released state and then deploy it to the trading system.

ACTICO:
You mentioned three statuses: *initial*, *valid*, and *released*. Valid means that a content-related validation has already been performed, such as the validation of mandatory attributes or the verification of the data type. Is this also done with business rules?

Traber:
Yes, the entire staging, i.e., the preparation process, is rule-based. Consequently, it is not just a question of examining individual data sets, but rather all relationships in the entire data model. For example, a financial instrument that users do not have access to for legal reasons does not have to be passed on to the trading system or transferred to the released status.

ACTICO:
STABILIT is a specialist in the area of master data management. You implemented the project at Eurex Repo and offer a software solution for rule-based master data management with your own *Data Care Manager*. What are typically the requirements for such a system and why do you rely on a rule-based approach?

Business rules in the data maintenance process



[3] *European Central Bank* [4] *Swiss National Bank*

Traber:
Basically, the issue of data quality plays an important role: the system has to deal with poor data quality, but only the highest-quality data can ultimately be provided. The system has to master this balancing act. This is where business rules technology comes into play, since it allows easy management of numerous validations, checks, and decisions.

The key user is the business department, which also results in a high availability requirement for the system. One challenge is that the preparation process can take place at two locations and the system has to be aligned and coordinated. In other words, if one system fails, the other system has to be able to take over.

Another important requirement is a very high degree of flexibility. The market changes every day. It may be that a rating changes or that something happens in a country which leads to a change in the valuation of a title. Such market changes have to be reflected in the system quickly. With the help of business rules technology such as ACTICO Rules, business rules are separated from the rest of the software, which allows us to configure the system very flexibly and comprehensively.

Hartmann:
We can upload new versions of the business rules to the running system at any time. The rules are then immediately available and ready for use.

ACTICO:
The rules technology therefore allows a separation of the business rules from the actual application logic and the IT release cycles, which ensures a high degree of flexibility.

Hartmann:
Exactly. An important advantage, though, is the degree of automation that the business rules technology brings with it. Manual validation or the dual control principle for new instruments is no longer required, which saves our resources. In the end, only that which is not running smoothly through the business rules is displayed on our to-do list – we actually only perform "exception handling". This is of great help to us because we can now concentrate on doing business.

ACTICO:
In the project, you have modeled about 8,000 business rules. These business rules are often distributed in documents, guidelines, software or the minds of employees. How did you define and map the rules?

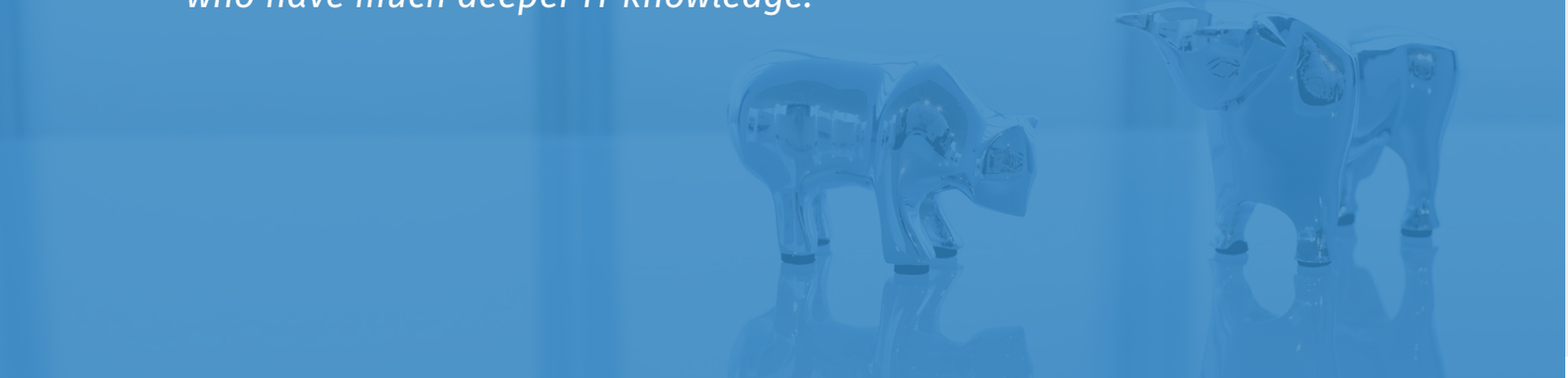
Hartmann:
This was a multi-month project in which we worked very intensively with STABILIT. The basis was our business object domain model, in which all entities and relationships are depicted. This model has been developed in many conversations and meetings and is represented in the form of rules in ACTICO Rules. Because the control technology is independent, we were able to simply upload and run new rules into the test systems. In this way, we quickly reached a result of what has run through and what has not, or where the process or the rules are still inconsistent. All this took almost half a year.

ACTICO:
The project therefore ran as an iterative process, in which business rules were modeled and then tested on the test system.

Hartmann:
Exactly. You could then directly see what worked and what needed to be adjusted. Considering the time pressure involved in the project, that was a very intensive phase. In the end, though, everything worked out fine.

Traber:
This iterative process is a necessity, because the business rules give the system a new degree of freedom. In addition to

> *“Without the graphical modeling approach, we would have to hire quite different personnel in terms of abilities and who have much deeper IT knowledge.*



false data and incorrect software, incorrect business rules can now also be implemented. That has to be taken into consideration.

ACTICO:
In the case of a large number of business rules, a form of rules categorizing is usually useful. Was there such a classification of the rules based on certain aspects?

Traber:
Yes. First of all, there are usually technical rules, such as field validations of data types. These are reusable and are grouped into one package. On the other hand, there are the more business-driven rules, for which business categories have been formed that can be understood easily by business professionals. Validation rules, for example, are about validating objects and financial instruments. A further group consists of assign rules, which now check the relationships between the financial instruments.

Hartmann:
With these rule groups, we try to maintain our business terminology: When we speak of "baskets", every employee knows what we are talking about. This is also taken into account in the underlying models.

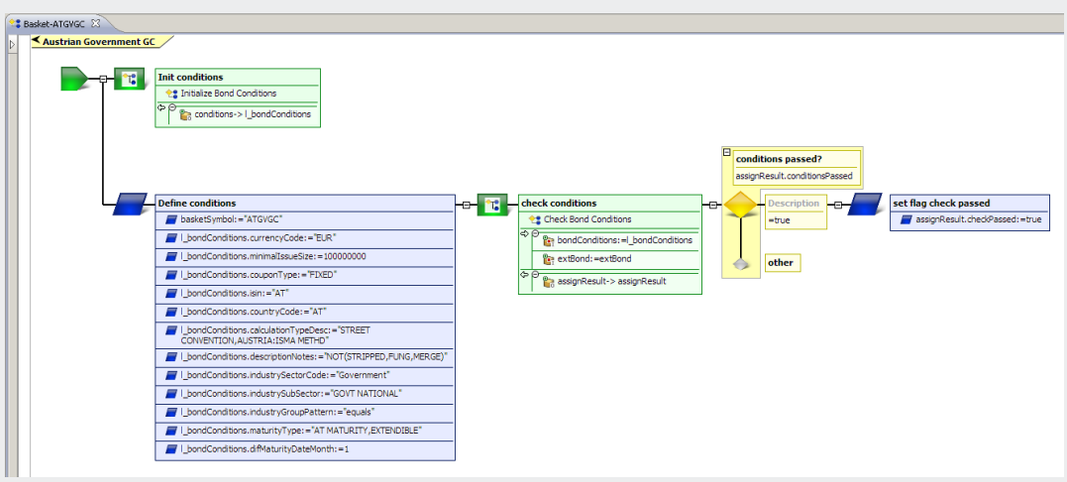
ACTICO:
Is it important that the department understands the business rules?

Hartmann:
Yes. In connection with the graphic modeling approach of ACTICO Rules, the business is enabled to adapt rules itself, such as when we decide to introduce a new currency or a new basket. Without the graphical modeling approach, we would have to hire quite different personnel in terms of abilities and who have much deeper IT knowledge. For complex topics or when something new is added, we still need the help of STABILIT.

ACTICO:
You mentioned the change of business rules. A high frequency of change in the business logic is, usually, an indication that a business rules management system is used, instead of hard-coding or “burying” business logic within application code, as in the case of classical programming. Can you confirm this from your experience?

Hartmann:
There are always small changes, because we offer new baskets, new currencies have been added, or even completely new segments are involved. One to three changes a month are not a rarity. The decoupling of the business rules offers the business the necessary independence, so it is no longer dependent on the IT and the release planning. In this regard, business rules technology offers a considerable added value. Nevertheless, we are of course constantly developing our trading platform while, at the same time, new attributes in the model have to be followed up in the downstream trading system, and a software release is finally needed.

ACTICO:
Mr. Hartmann, Mr. Traber, thank you very much for the interview.



The graphical modeling approach and the use of business terminology allow for a quick and easy understanding of rule models.

About Eurex Repo

Eurex Repo is a leading provider for international financing in the secured money market business (repo and securities lending). Its highly liquid marketplace combines electronic trading, with the efficiency and safety of clearing as well as standardised collateral management and settlement for secured funding and financing transactions.

About STABILIT

Since 1997 Stabilit Informatik AG has provided comprehensive consulting services combined with profound expertise in customized IT solutions development. Stabilit Informatik AG is an expert in software engineering with a focus on rule-based systems and enterprise application integration.

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ACTICO is a leading international provider of software solutions and technologies for decision management.

In a digital world it is necessary to process large volumes of data and make fast, consistent and auditable decisions; that is where our software solutions provide an advantage. Business rules and processes can be easily adapted and executed automatically, which improves the efficiency and agility of our customers in their competitive area. This also enables them to accelerate their growth, innovate effectively, stay compliant and as a result, increase profits.

ACTICO provides software solutions for the areas:
- Credit Risk Management: Assess and monitor credit risk
- Loan Origination: Automate credit checks and decisions
- Compliance: Enable transparency, comply with regulations and avoid fraud
- Claims Management: Make claim settlement processes quicker, consistent and cost-effective
- Client Management: Handle sensitive customer data securely – from onboarding to reporting

ACTICO's roots go back to 1997 and Innovation Software Technology GmbH, which became part of the Bosch group in 2008. ACTICO was formed when Bosch spun off its financial software operations in November 2015. As an independent company, it supports its international customers from locations in Germany, the U.S. and Singapore.

More information: **www.actico.com**

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