VRE :- Virtual Rule Engine

GTR :- Global Trade Repository

VRE is an part of the GTR application. Which helps in transforming and validating input trade messages. The trade messages are in the form of FpML and CSV format. The input files are coming from different jurisdiction (Canada, US , Europe, Singapore , HongKong ,japan and Australia) . All the validations are defined in the xsd file and it differ based on the jurisdiction. Trading organizations must record all these trading information to maintain the history for reporting purpose. (Value date , Trading time ,settlement date,quantity and price) . This application fully concentrate on the derivatives type of trading. There are two types of validation happens in VRE , Stateful and Stateless.

Stateless validation : All the input fields are validated as per their types and restriction enforced by the jurisdiction

Stateful validation : Each trade is validated for the existence or non existence of the trade exist in the database.

DTCC – Depository Trust and Clearing Corporation. It is non profit organization in us.

Derivatives :- derive the value from underlying asset such as equity, commodity, fixed income security and currency. Derivative are financial contracts between two parties.

ESMA :- European Securities and Markets Authority

Fields in the FpML:

|  |  |  |
| --- | --- | --- |
| Code | Source | Description |
| C | FpML | Cancel - Termination of the existing contract |
| N | FpML | New - Derivative contract reported for the first time |
| M | FpML | Modify – Modify the details of the existing contract |
| E | FpMl | Error – Cancellation of the wrongly submitted contract |
| V | FpML | Valuation Update – an update of the contract valuation |
| Z | FpML | Compression ( a compression of the reported contract) |
| Fixed Price | FpML | An numerical price that is used to price a derivative |
| Fixed Rate | FpML | A numerical rate that is used to price a derivative |
|  |  |  |
|  |  |  |

Asset class:

Commodity

Credit

Equity

Foreign Exchange

Interest Rate

FpML :- Financial Products Markup Language which is the standard format used to exchange the online business transactions for the OTC (Over The Counter ) derivatives.

DTCC -

CSV :- comma Separated Values

How the transformation happens?

How the validation happens ?

What is stateful validation ? example

What is stateless validation ? example

What is ESMA(European) and the other one? HKMA (HongKongAsiaSingapore)

How transformation happens for input messages ? what is the format it has been transferred?

What is the API has been used for XML transformation ?

How rules are defined and what is the API used for defining rules?

Drools rule engine

Schema parser

Business validation

External – cdts ->vre reading meases from MQ using JMS ->Transformtation -> FpML has to get transformed using Xpath -> java object (using VTD Parser ) -> droll rule read the FpML and put into java object 🡪 Validation rules -> ACF injestion -> message broker -> downstream

Stateless validation

Stateful validation – existence separate call to dB to make sure the prescence of data in DB. Pure JDBC

There is an External CDTS system which is the source system of VRE. This system placing the messages into Message Queue. JMS API is used to read the messages from the Queue.

There are 2 steps which VRE is taken care of .

Transformation: Once the messages are received into VRE from MQ , It will be pared using the VTD parser against the XPath into java object. This is executed by the rule engine.

Validation : Once it is transformed into an java object , the business validation has to be done based on the business requirements given by the client. Once the validation has gone thru then it will be sent to the downstream which will further send it to DB via message broker.

There are two types of validation which are stateless and stateful.

Stateless : This is input field validation against the restriction enforced by the jurisdiction

Stateful : This verifies the existence of trade details in Database. Plain JDBC connection is used to connect the DB for this verification.

Once both the step has been gone thru , it will send to ACF system.

**VTD :- Virtual Token Descriptor**

It use XPath to navigate thru the XML. It gives better performance than DOM and SAX.

* Is suitable for cloud computing and SOA
* It is an memory-efficient and random access xml parser
* It allows xpath for xml parsing

**What happens when the validation fails (stateful and stateless) ?** NACK message is generated and stored in DB. Later the Reports are generated where the clients can verify the NACK message and resubmit

**Are the user resending the failed messages ?** Yes

**How the user know that failure of this message ? Are we recording anywhere ?** Through the Trade State reports

**I remember some tolls we were using to maintain the meta data .what is that ?** Collibra is used by business analyst to capture the business rules.