

Market Data Management System

Cooperation Proposal

Table of Contents

1. Introduction	2
1.1 Document naming conventions.....	2
2. MDM Overall description. System workflow	3
2.1. MDM Development and Maintenance. Project Infrastructure.....	4
2.2. MDM end User Support Overview	4
2.2. MDM end User Support Workflow.....	4
3. MDM Key technical responsibilities	6
3.1 Application landscape maintenance	6
3. 2 Interface execution.....	6
3. 3 Maintaining and adjusting content via User Interface.....	6
3. 4 New releases and testing of the interface	6
3. 5 Enhancement and development of new SOAP interfaces.....	7
3. 6 Development of new user interfaces.....	7
3. 7 Resources and budget planning	7
4. MDM key support responsibilities	8
4.1 Maintenance of client software and release management.....	8
4. 2 On-site supports of all kinds of requests	8
4. 3 Communication with data suppliers and providers.....	8
4. 4 Interfaces	9
4. 5 License management support.....	9

Attachment 1. Market Data Management system workflow

1. Introduction

Results and Solutions. This is the focus of our work at MDM: providing difference-making digital solutions and experience that enable the success of our clients' mission.

MDM is a team of highly skilled and trained specialists which provides synchronous Development and End-users support for different types of projects.

This document describes technical and customer related aspects, the general structure of the MDM system, processes, and workflows. It is designed for the End Users, Development specialists and Business representatives.

1.1 Document naming conventions.

The terminology used in this document are as follows below:

- **Providers** – providers of business market data
- **MDM-** Market Data Management system
- **End User-** any MDM system User
- **MDM End User Support Team** – specialists oriented on customer satisfaction.
- **MDM Development Team-** specialists engaged in all development and infrastructure maintenance processes.
- **MDM System infrastructure** the complex of software and hardware designed for development and maintenance of MDM Project.
- **INTERFACES** - market data interface designed for data delivery.
- **Market data-** the complex of indexes, quotes and prices contracted and available in MDM system.
- **“Raw data”** input files with data received from providers.

2. MDM Overall Description. System Workflow

The main purpose of MDM project is to deliver constantly the Market data to the End Users in one single solution. The process of data delivery from diverse providers requires interaction with multiple external resources and therefore an Infrastructure such as MDM that gathers all requested data is facilitating all business processes related to market data.

- Market Data Management System is paramount for any analytically driven business, since provides on demand use of Historical Data.
- Market Data Management System is a Centralized data hub for different kinds of data like prices, traded volumes, etc.
- Market Data Management System provides control on Data Quality Process, adjusting raw data into approved data used for analytics purposes or billing.
- Market Data Management System is monitoring compliance of data distribution according to providers and exchanges.

MDM uses the expertise of specialist in 2 main domains - Development and Support which are tightly working together daily. This ensures the business continuity and a high-level customer satisfaction.

MDM project workflow is represented in Attachment 1.

2.1 MDM Development and Maintenance. Project infrastructure

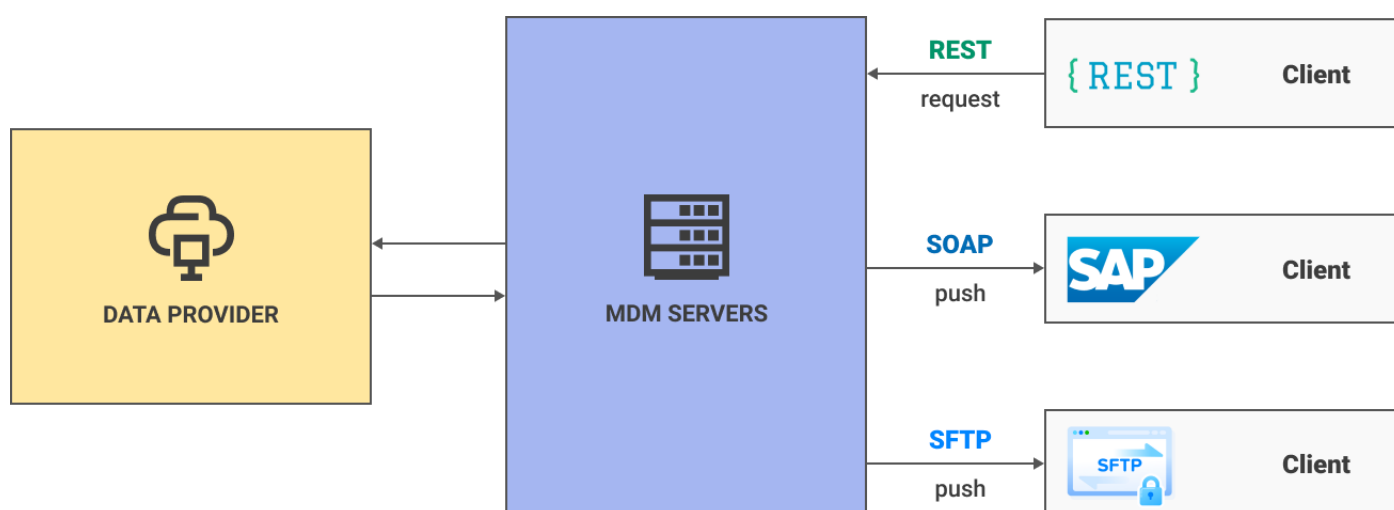
MDM Development team is represented by IT experts experienced to efficiently manage, update, and develop the product to satisfy End User needs.

In the daily activity the Data Quality Process Flow is monitored adjusting “raw data” received from the different Providers into “approved data” used for analytics purposes or billing.

Upon End-users request MDM specialists develop & implement unique, efficient, and helpful features required to facilitate and improve business processes.

MDM Development team provides technical assistance and support, permanently monitoring and maintaining the infrastructure boosting MDM Project performance.

The infrastructure is represented in the below scheme.



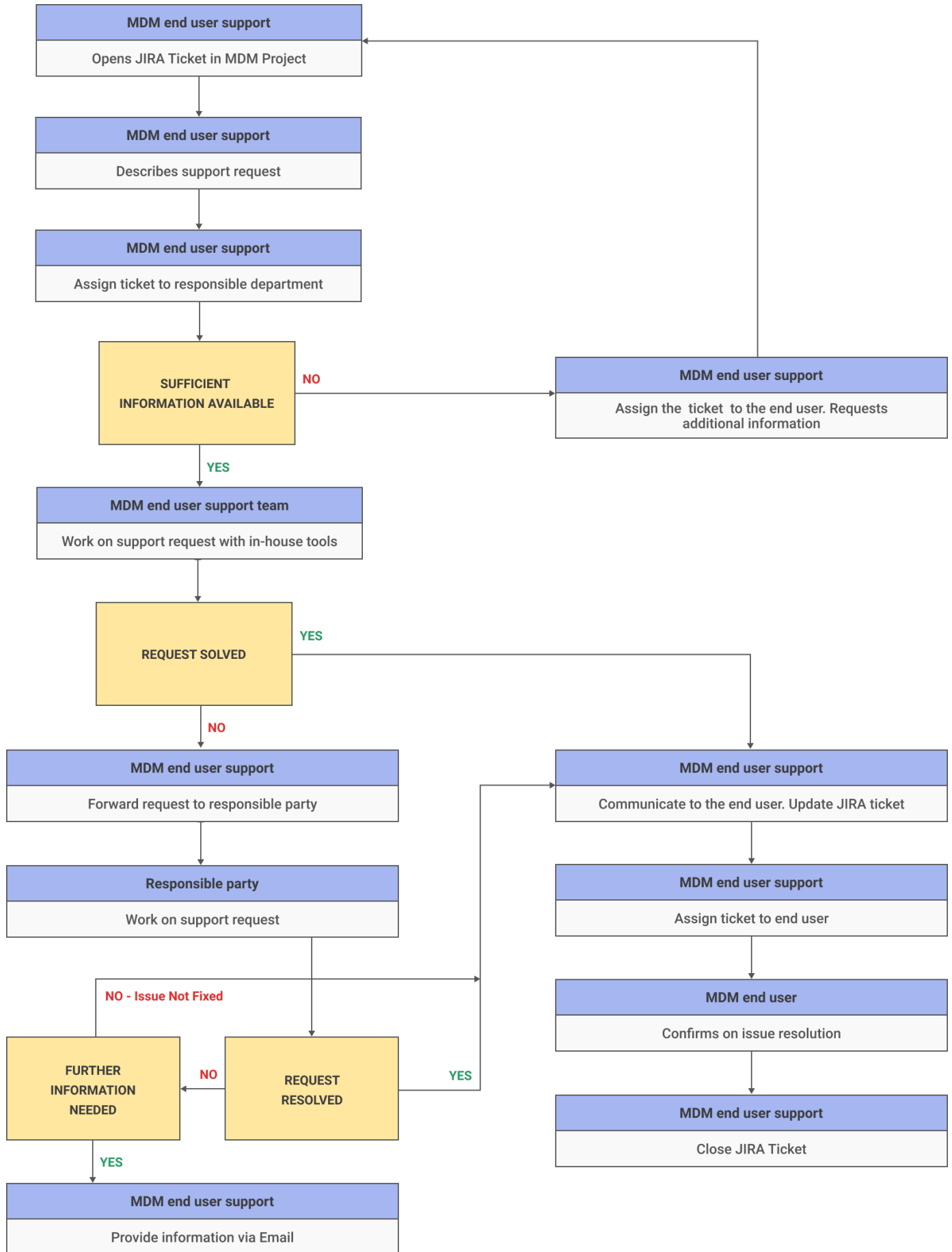
Scheme 1. System Architecture

2.2. End User Support overview

MDM Support specialists are the first line of help when End-users encounter problems with market data and programs. It is their duty to answer telephone inquiries, respond to emails and perform in-person support sessions.

MDM Support is willing to resolve any issues which might appear during daily business activities: contact Providers to ensure Data consistency, investigate the root cause of the problem and fix it in a best possible solution. In the daily performance MDM Support provides the End-Users with a wide range of services to support and enhance the business activity in efficient and prompt manner.

The general approach of the MDM Support is represented in the below Scheme.



Scheme 2.
End User Support Workflow

3. MDM Development key responsibilities

MDM Development and Maintenance team performs a set of daily tasks and is involved in internal processes related to System well-being, enhancements, and stable structure and performance.

3.1 Application landscape maintenance

- Installation, configuration, and other maintenance of Wildfly and MySQL server installations

3.2 Interface execution

- Interface execution. Checking of data transfer and call interfaces in REStEr
- Checking successful execution of interfaces or technical error analysis
- Analysis of wrong or missing data

3.3 Maintaining and adjusting content via User Interface

- Adjusting mappings according to specific interface logic
- Addition of new data sets to the Interface. Testing of data transfer.
- Technical research with Providers colleagues on data formats and API requests.

3.4 New releases and testing of Interface

- System version upgrade both on Test&Prod
- Compliance of new MDM Project for new API
- Functional testing
- Identify bugs and / or new functionalities.
- Design and execute test cases.
- Communicate and document issues.
- Regression testing
- Setup SMTP server&details for system notifications

3.5 Enhancement and development of new SOAP interfaces

- Collecting of Interface requirements
- Analysis of functional and technical requirements
- Specify and describe Interface design (system setup and configuration)
- Test interface functionalities
- Bug fixes and solution implantation
- Document maintenance procedures
- Analyse system landscape.
- Identify possible threats / issues.
- Communicate issues and develop fixes / workarounds.
- Increasing the information content of the monitoring system messages

3.6 Development of user interface

- Specify User interface functionalities (design, setup)
- Develop / implement User interface with Vaadin Framework.
- Test and monitor User interface.

3.7 Resource & budget planning

- Efforts and cost estimation
- Budget proposal and approval
- Prepare plan of implementation, monitor execution and report progress to the management.

4. MDM Support key responsibilities

MDM Support team performs a set of daily tasks and is involved in most of business processes related to data delivery to End Users. As a brief overview follow the most common areas of MDM Support team responsibilities.

4.1 Maintenance of client software & release management

- Providing Access to the system application. Support on installation and configuration of both Test and Prod environments
- Monitoring of data consistency by categories and packages.
- Creation of new users in the system and assigning with the appropriate user rights upon licensed management procedure.
- Setup& Maintenance of Workflow Reports both on Test& Prod (Users Audit, Corrections etc)
- Run data consistency checks in the system.
- Compare price data directly from Providers sites and/or reports.

4.2 On Site support for all kind of requests

- Ad-hoc user requests. Collecting information regarding the request: Quotes, Provider, Range.
- Support to find data and analyse wrong or missing price data.
- Analysis on product features for End User. Research on Providers pricing methodologies and documentation.
- Research on product properties within the system application. Request information from data Provider.
- Support for End User issues with system application
- Solving End Users' issue

4.3 Communication with data providers

- Creating of support requests.
- Prioritize outstanding issues.
- Reply on follow-up questions from Data Providers and monitoring of support requests.
- Discussing of upcoming release and new functionalities.
- Monitoring of quotes prices delivery and evaluation of new data.

4.4. Interfaces

- End Users support on data analyzing, investigating the reason for missing quotes and price data.
- Processing of End Users's requests on pushing the needed market data into Interfaces.
- Monitoring of Interfaces. Supervision of data delivery in monitoring tools, analysis of the data delivery status.
- Support development team in maintenance of data delivery into Interfaces.

4.5. License management support

- Process End User support request regarding addition of new data packages.
- Gather information from End User on data requirements.
- Initiate contact with support desk of the provider.
- Provide additional information if required by Provider.
- Communicate with End User and responsible department regarding the progress.
- Provide End User contact information to Providers in case of direct data delivery.
- Set up user access according to contract.
- Monitor data usage according to the given policies

Attachment 1

Market Data Management System Workflow

