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MDM Enterprise Analyzer:
a framework to support centralized and local master data quality analysis

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Master Data Key Success Factors
Strategy and Governance

- Global MDM Management
  - Master data strategy and organization
  - Global master data quality and service controlling
- Global MDM Teams
  - Definition of global standards for master data objects and processes
  - Definition of global maintenance rules
  - Definition of global quality and service standards
  - Collaboration with regional MDM teams and global business drivers
- Regional MDM Teams
  - Definition of regional standards for master data objects and processes
  - Definition of regional rules in addition to global rules
  - Regional quality and service controlling
- Data Stewards
  - Collaboration with local business and MDM power users
- MDM Power Users
  - Maintenance of certain MDM objects or object parts

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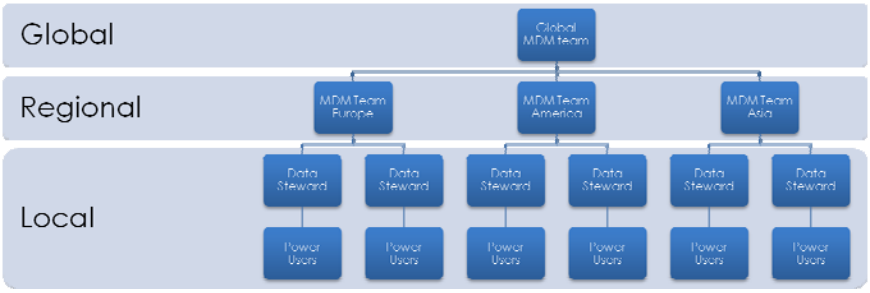
Hierarchical MDM Organizations



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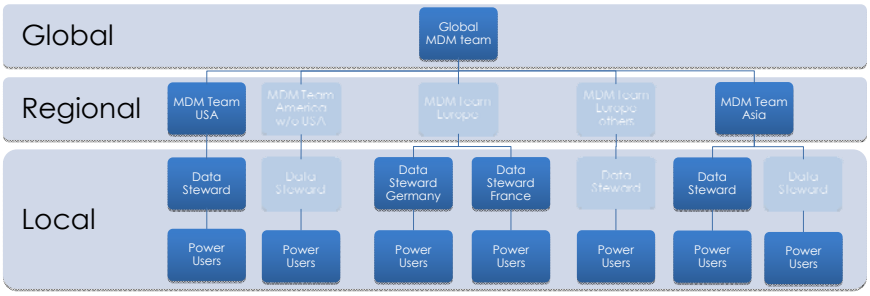
Typical MDM Organizations



- Incomplete, unbalanced hierarchies
- Inhomogeneous MDM experience and skills

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Why improve MD Quality?

- Transactional processes base on MD objects, i.e. insufficient MD quality leads to …
  - … delays in the supply chain
  - … expensive additional manual work
  - … increased risks (credit limit, dangerous goods)
  - … issues with reporting and analysis systems
- Demands due to
  - … local laws and legal restraints
  - … customer or vendor requirements
  - … internal company policies
  - … restraints required due to stock exchange (e.g. NYSE/SEC)

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Conclusion

Increased MD quality …

- … reduces costs
- … reduces risks
- … increases transparency (reporting / analysis)
- … speeds up the supply chain
- … observes the laws and restraints

Better MD quality makes your CEO sleep better!

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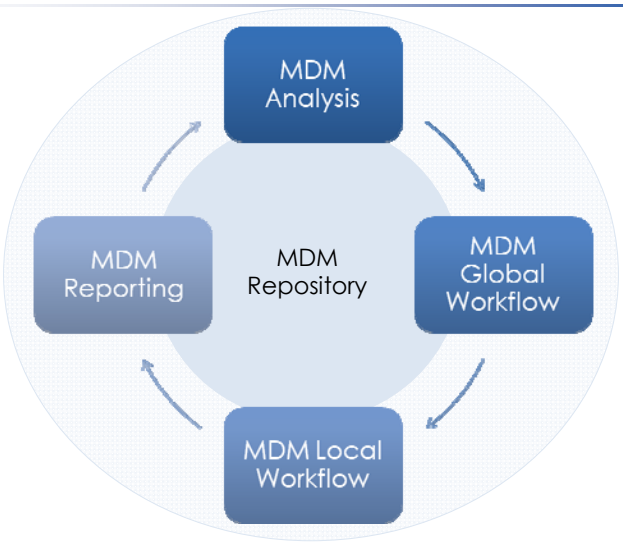
MDM Application Suite



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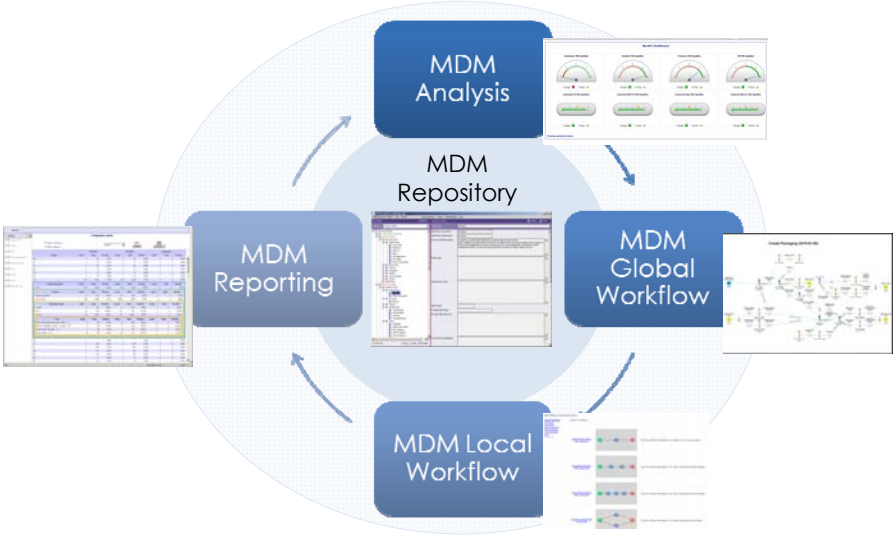
MDM Application Suite



MDM Analyzer
Technology

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MDM Analyzer …

- … is an analytical system for master data
- … allows rules-based analysis
- ... supports local and global rules
- ... supports local and global responsibilities
- … allows views restricted by access rights
- … bases on data warehouse technology
- … is a centrally installed and maintained system

MDM Analyzer
Business

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MDM Analyzer …

- … shows MD quality indicators on high and detailed level
- … shows the increase and decrease of MD quality over time
- … finds invalid master data and helps to initiate correction processes in MDM Enterprise Workflow

MDM Analyzer supports MD governance
and controlling tasks in the complete MD organization

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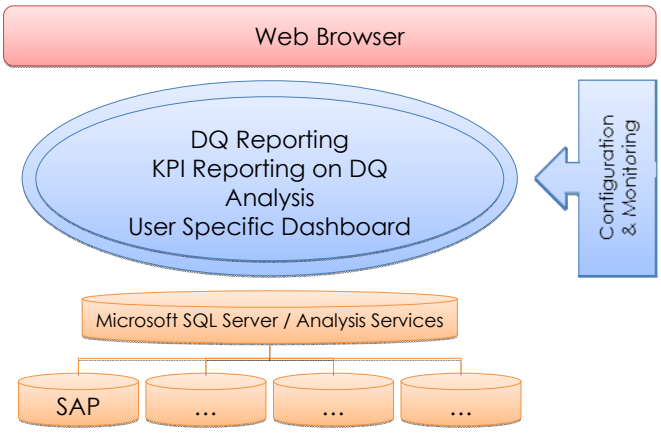
Architecture



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Basic Principles of MDM Analysis

- Administration Areas

  An administration area allows the delegation of responsibilities to area administrators and the mapping between the MDM organization and the MDM Analysis system.

- Sources and Rules

  Every rule is based on a source. A source defines the data set that is analyzed by a rule:

  Rule Data Set ⊆ Source Data Set ⊆ Database

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Rules based Analysis

- There are other ways to detect incorrect data in IT systems, e.g. statistical methods, neuronal networks, etc.
- The rules-based approach is used because the requirements on MD quality are based on rules.
  - MD is used in systems where transactions require well specified information
  - Legal and financial restraints are well specified and define rules
  - Customer and vendor requirements are rules based

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Rules and Localization

- Rules can be global
  - Required by a global IT system
  - Based on global company policies
  - …
- Rules can be local
  - Local laws and restraints
  - Local customer or vendors requirements (e.g. by local logistics providers)
  - …

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What can be analyzed?

Sample rules:

- Customer names should start with a capital letter
- European customers need to have a VAT number
- For each vendor at least one contact needs to be assigned
- Ordered products should have status 'in process'
- For each material in SAP marked as dangerous good, security instructions must be available in the fire department system
- …

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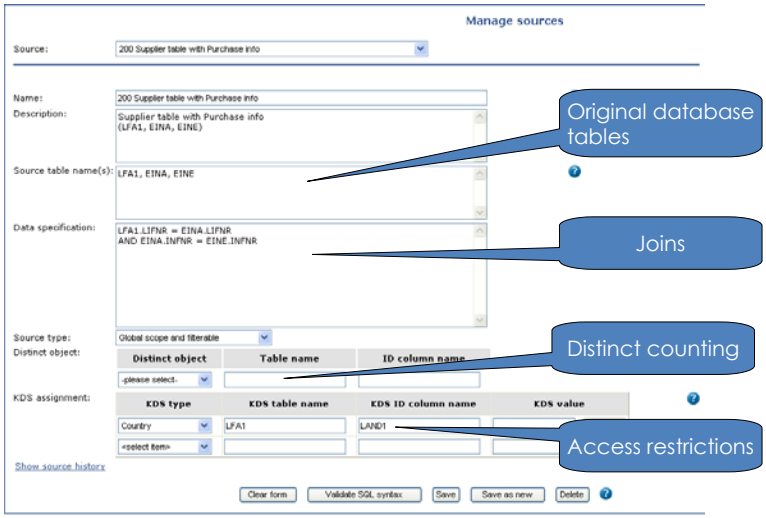
Source Management



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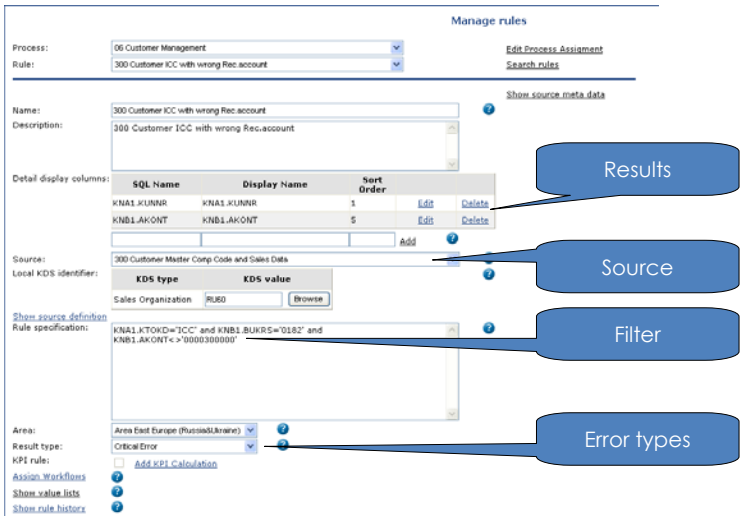
Rules Management



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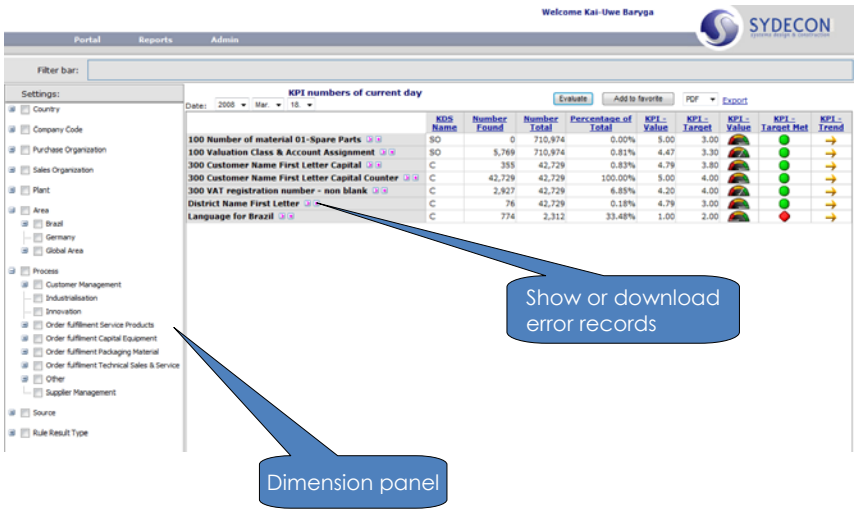
MDM Analysis Results

- Dimension Panel in order to navigate in MDM dimensions:
  - Processes, Sources, Rules
  - Areas
  - Key data structures
- Different types of result tables and graphs
  - Current day
  - Compare with history
  - Drill down
  - Drill trough to source data
- Integration
  - Download of error records
  - Integration of MDM Enterprise Workflow

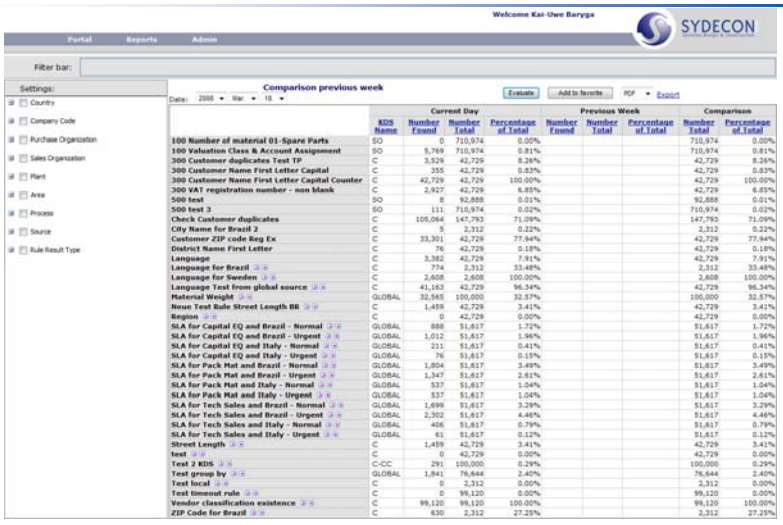
MD Quality Analysis

List of KPI with target and trend



MD Quality Analysis

Compare with last week



MD Quality Analysis
Drill Down

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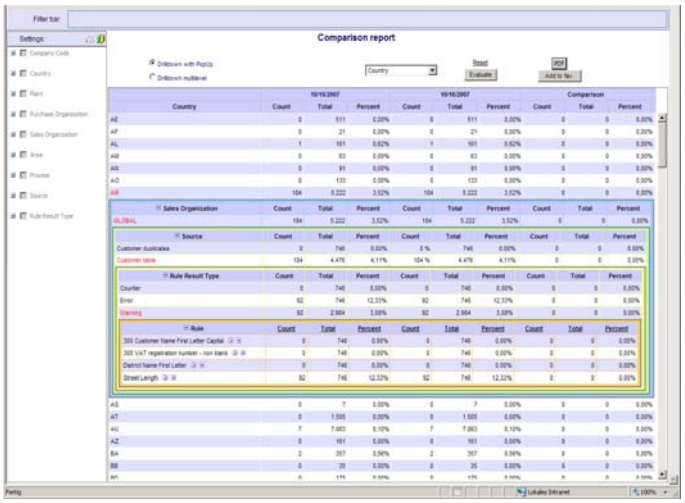

27. Mai 2008

MD Quality Analysis
Initiate MD Change Request

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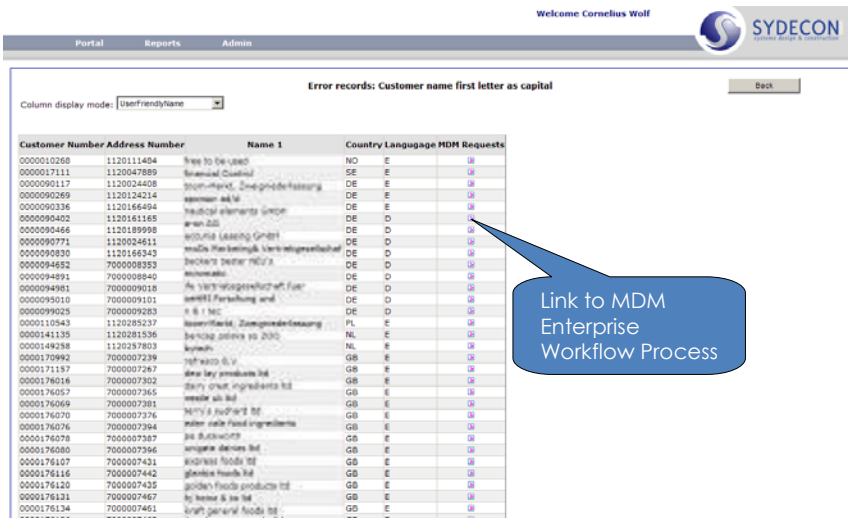

MDM Enterprise Workflow
Initiated by MDM Analyzer

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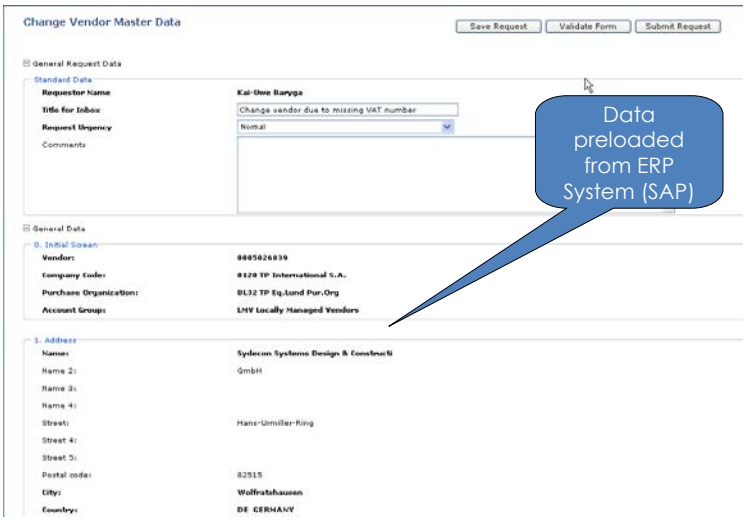

Mapping of MDM Organizations to MDM Analyzer Areas

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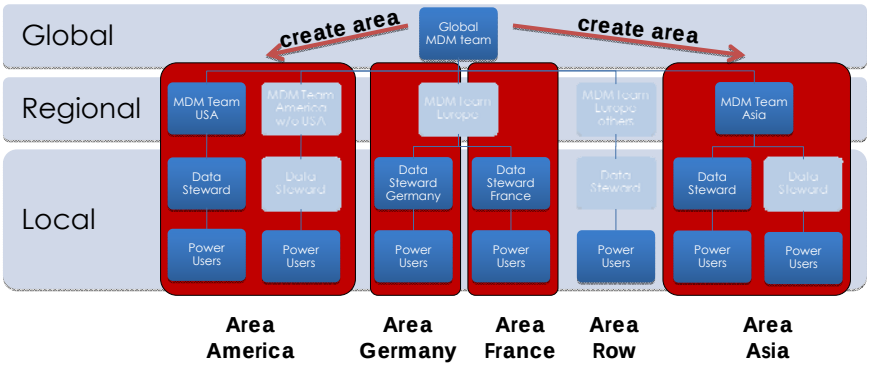

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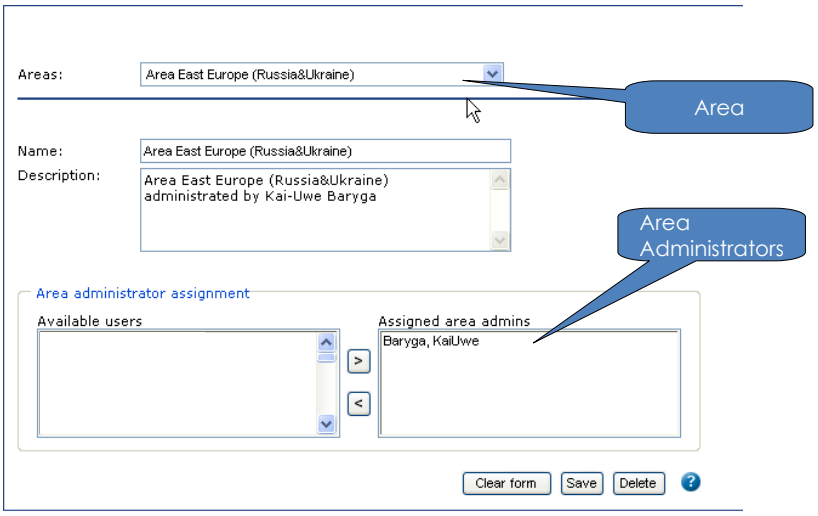
Area Management



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Use Best Practice

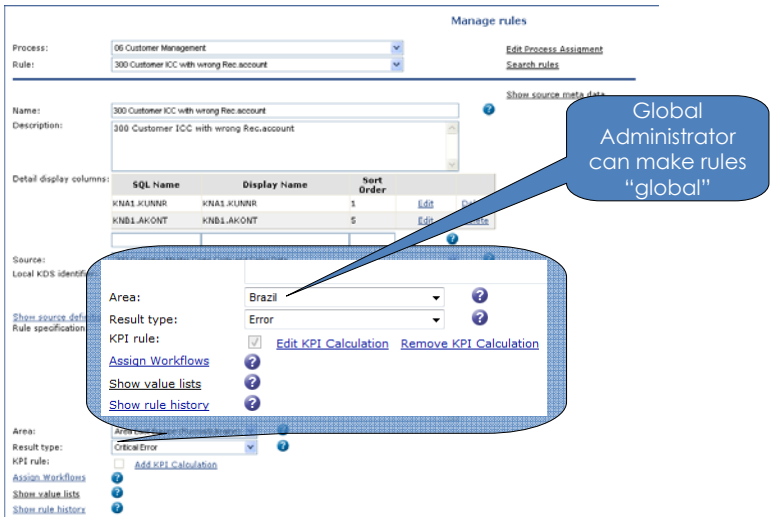
Area administrators …

- … often have excellent business experience
- … have to 'feel' the results of insufficient master data quality
- … do their best to get perfect master data quality in order to reduce effort for corrections

This leads to best practice solutions that can be reused and delivered centrally

Best Practice

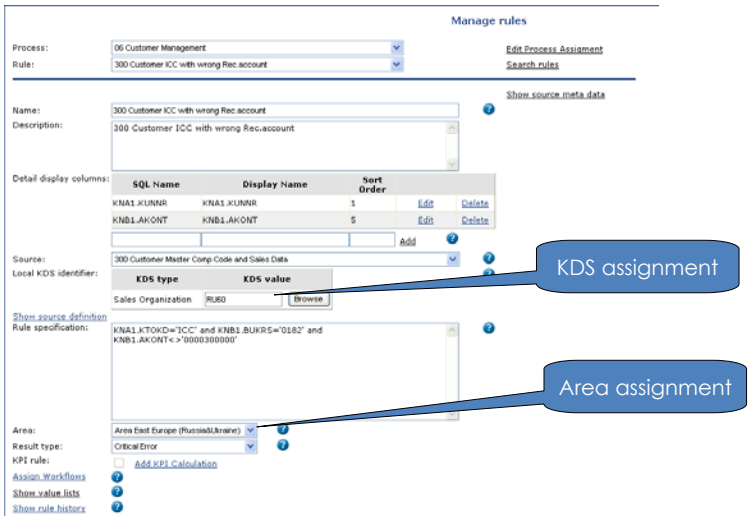
Setting in rules



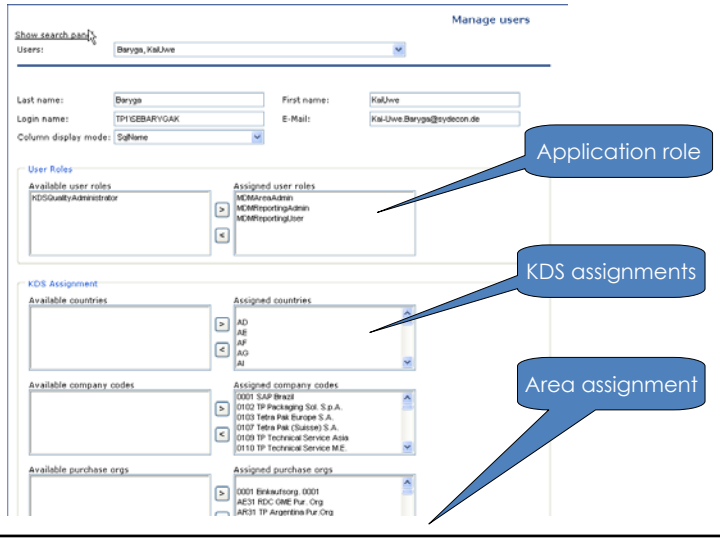
Access Rights

- Access rights base on the MDM areas and KDS
- Key Data Structures (KDS) are business object related organizational structures, e.g. sales or purchasing organizations, countries and plants
- A user can see data of global rules and rules of his area, if he has the KDS assigned that is required for the data
- E.g. in order to see Brazilian customers with an incorrect address, the user needs to belong to the area South America and have access to the sales organization BR00

Access Rights
Setting in Rules



Access Rights
Setting for Users



KPI Reporting
General

- Users can specify KPIs and KPI groups based on existing rules
- Multiple KPIs per rule can be defined
- KPIs are shown in main analysis page
- KPIs can be shown in the KPI dashboard of MDM Analyzer and in the 'Welcome Page' of the MDM portal.
- A user can specify which KPI he wants to use in his dashboard on an individual base

KPI Reporting
Rules Result Normalization

- The results of rules can be normalized based on the absolute number of errors found or the error percentage

- Normalized Rule result = f(rule result) $\in [0, 1]$
- The function f can be
  - linear, based on the percentage
  - A step function based on values or percentages

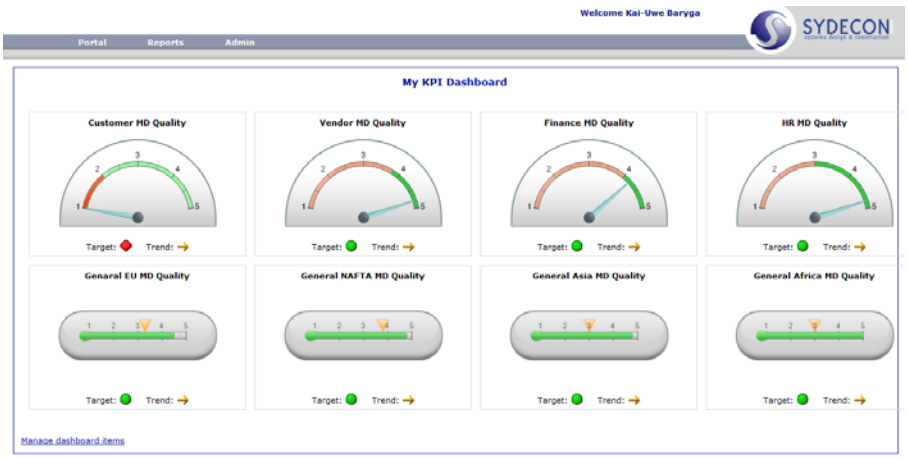
KPI Reporting
Result Weighting

- The normalized values can be weighted to a grade between 1 and 5
- In addition a target can be assigned to a rule. A target is also a value between 1 and 5.

KPI Reporting
Grouped KPI

- KPIs can be grouped
  - A KPI group consist of one or more KPIs
    E.g. Customer KPI group can consist of a Customer Address KPI, a Customer Finance KPI, etc.
  - Each KPI in a KPI group can be weighted with percentages.
    A more important KPI will have a higher percentage than a less important
  - The user can drill down from KPI groups to the individual KPIs in his dashboard

KPI Dashboard
Sample



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Performance Aspects

Critical performance areas

- Data loads from ERP systems to the staging area database (less critical than in transactional data warehouses but still a point)
- The Source should not join too many very large tables
  (we currently use tables with > 250 million records)
- Multiple KDS assignments should be handled with care
  (no problem in case of real hierarchies, unfortunately this is not always found in SAP environments)
- Drill trough with many records

After processing
the analysis does not cause high loads!

Technology

- Microsoft SQL Server 2005
  - Database Service
  - Analysis Services
  - SQL Server Integration Services (SAP connector)
- Microsoft Internet Information Server
  - Microsoft .NET
  - Developed in C#
- SYDECON is a Microsoft CERTIFIED Business

Summary

- The support of central and local analysis is essential for MD Quality control
- Rule based analysis allows direct implementation of business and governance requirements
- Central and local management of rules and access rights make the system more efficient and effective
- Central systems management allows global control of system resources
- Integration in MD maintenance systems adds additional benefits

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Ongoing Development

- Closer integration of repository and analysis
  - Specify rules with data specification in repository
  - Specify relationship in repository that can be used in analysis
- Additional automated tasks based on analysis results
  - Mass maintenance
  - Automated data correction

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Discussion & Demo