

klopotek.

Message Based Services (MBS)

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Klopotek & Partner GmbH
Schlueterstrasse 39
10629 Berlin
Germany

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MESSAGE BASED SERVICES

Introduction

Today's business processes in the publishing industry are characterized by the fact that different systems and subsystems are used to carry out important tasks in the data and/or workflows. The increasing number of systems involved and interfaces required, is largely due to internal company functions being partially replaced by customer oriented functions based on web technology (e.g. customer self care and ordering) and to the fact that business processes are divided up between multiple systems.

Previously it was sufficient to implement the necessary communication streams with file based, asynchronous and only "once-a-day" interface solutions. This kind of technology is, however, often too complex to handle without difficulties regarding the defined business processes. The various data structure requirements and special formats required by the systems involved are mainly responsible for this complexity. Especially when nearly identical information has to be distributed (e.g. for products) to different systems, each with their own interface formats, the degree of variance between previously similar interfaces simply explodes.

Furthermore it has become more essential to inform and to be informed by other systems about data creation and modification in "real-time". This cannot be achieved by direct access to the Klopotek data using the web services that are already available. Web services retrieve information about modified data, if requested, but are not event driven, in that they do not actively push relevant modified information. Shortening the time intervals between the standard import and export processes would simply increase the volume of database activity, which in turn would probably disturb the user at work. Another problem are the usually "fixed" data exchange chains, which cannot be adapted easily to accommodate the ever changing business processes.

Klopotek has developed a flexible interface framework based on the idea of active communication between multiple systems to deal with the abovementioned issues. The approach is described as a "Message Based Services (MBS)", based on Java, as well as Klopotek Standard web services and is an enhancement of the existing standard interface technology.

The "Message Based Services (MBS)" technology is based on an XML data structure as the format exchange standard. The adoption of XML (Extended Markup Language) in combination with easy to use validation and transformation functionality is, in view of the existing format diversity, the most effective way to let systems "speak" to each other and to exchange data in a structured and well documented manner. The information units used for communicating with other systems are known as Business Data Messages.

As sending and receiving modified data in real-time is the main task of message based services, this approach provides a much more intelligent trigger and process mechanism for data modification than can currently be supported by existing file based standard interface technology.

Nevertheless, interconnecting several systems creates the need for a vast number of different interfaces or interface structures. To simplify the increasing complexity, the entire technological scenario can be complemented by specific middleware components like the ESB (Enterprise Service Bus) from SONIC or the XI Environment (Exchange Infrastructure) from SAP. These components support the data driven definition of business processes as well as the mapping process from one interface to another. They allow the definition of pre-configured services that track and control the entire dataflow between multiple applications. The main advantage is that a customer specific "staging area" for business data can be built up for central business transaction processing. The data stored is

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easy to identify and accessible for many systems via the defined connection utilities.

Instead of implementing sophisticated middleware components to support a centralized approach to intercompany communication, message based services also support the "normal" queuing functionality already provided by many database systems. A queue holds received data until it is processed by the different consumers and is seen to be a more a technical solution used to decrease the number of existing file based interfaces.

Message based services do not provide the same functionality as the middleware components mentioned, but they do allow an easy way of connecting the web services and thus the data maintained in the Klopotek system to such software systems.

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License products

With respect to licensing, Klopotek Message Based Services are broken down into modules ("adaptor families") that cover different areas. To use a specific Message Based Service (MBS), the license for the associated MBS adaptor family is required.

MBS Adaptor Family	Adaptors	As of Version	License Product
MBS Base Functionality	Listener Process XML Splitter Process Broker Process (IN and OUT)	8.5	MBS-000
Business Partner MBS adaptor family	Business Partner adaptor (OUT)	8.5	MBS-010
Product MBS adaptor family	Product adaptor (OUT) Product Series adaptor (OUT) Product Classification adaptor (OUT) Product Price adaptor (OUT) Product Classification adaptor (IN) Product Import Interface adaptor (IN)	8.5	MBS-020
Digital Asset MBS adaptor family	DAC Product adaptor (OUT) DAC Contribution adaptor (OUT) DAC Series adaptor (OUT)	8.8	MBS-030
Contract MBS adaptor family	Contract adaptor (OUT)	8.5	MBS-040
Sales Data MBS adaptor family	Backorder adaptor (IN) Sales Revenue adaptor (IN) Stock Entry adaptor (IN) Feedback from distributor (IN)	8.5 9.5	MBS-050
Workflow MBS adaptor family	Event Log adaptor (IN) Reminder adaptor (IN) Schedule adaptor (IN)	8.8	MBS-060
Supplier Order MBS adaptor family	Supplier Order adaptor (OUT)	8.5	MBS-070
Production Project MBS Adaptor Family	Calculation adaptor (OUT) Product Cost adaptor (IN)	8.5	MBS-080
Online Subscription MBS adaptor family	Online Subscription adaptor (OUT)	9.0	MBS-090
Warehouse MBS adaptor family	Stock Item adaptor (IN)	9.5	MBS-110

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MBS Base Functionality

MBS-000/8.5

Listener Process, XML Splitter Process, Broker Process (IN and OUT)

The license product MBS Base Functionality is always required when using MBS products.

Architecture

The components handling incoming and outgoing messages are divided into message brokers and message adaptors. They run within the Klopotek WAS (Web Application Server). On the one hand they communicate internally with the standard business logic, loading and saving the necessary domain objects (products, business partners, ...). On the other hand, they communicate with the external system by sending and receiving XML messages to and from the respective endpoints.

The message brokers (IN / OUT) distribute changes to message adaptors. Only the message adaptors know about business logic services and call upon these services in order to deal with the changes.

Brokers

Brokers are responsible for selecting the adaptor, which is able to process a message. We can distinguish between two types of brokers:

- the OUT broker processes an internal data change and tries to find an OUT adaptor (publishing adaptor), which is capable of processing the change and sending the necessary XML to the configured endpoint
- the IN broker receives an XML from an endpoint and tries to find an IN adaptor (subscribe adaptor) which can process it. This process is also called "Listener Process".

Adaptors

Like brokers, adaptors can be distinguished in IN and OUT adaptors:

- the OUT adaptor processes an internal data change (data was inserted, updated or deleted) and sends a corresponding XML to the OUT endpoint
- the IN adaptor processes one incoming message from endpoint IN and saves the data by calling upon the necessary business logic.

Either the IN adaptor uses the real business logic including all validations to access the production data tables, or the communication is carried out using standard interface tables and the corresponding batch procedures.

If standard interface tables are used by an IN adaptor, only rough validations are executed by the adaptor. Further validations are done later by the batch procedure used.

Endpoints

Endpoints are used to define both incoming and outgoing channels for external communication.

- The service listens to new messages from **incoming channels** and sends them to the processing adaptor once they have been identified.

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MBS Base Functionality

MBS-000/8.5

- **Outgoing channels** are used to send messages, which transfer data or are error messages.

Endpoints are defined in URL. This makes a customized configuration of the endpoints possible. Endpoints are made up of fixed predefined components and individually configurable attributes.

XML Splitter Process

To process mass data from large XML files, the XML splitter can be used to split the XML into separate messages for further processing.

Technology

Data exchange is carried out by XML messages. XMLs can be sent to / received from different endpoints (interface technology). This is also valid for the error / fault messages produced.

Interface technology

4 different endpoint classes are offered:

- **OUT (publish)**: used to publish data from the Klopotek ERP to a receiving system.
- **IN (subscribe)**: used to receive data from an external system.
- **ERROR (publish)**: used to publish technical errors (i.e. internal exceptions) of the Klopotek adaptor.
- **FAULT (publish)**: used to publish business process related errors (i.e. validation errors) from the Klopotek adaptor.

Different kinds of technology are supported for these endpoints. Currently queues, files, mails and a special DB interface table are supported.

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Business Partner MBS adaptor family

MBS-010/8.5

Business Partner adaptor (OUT)

The message published by this adaptor contains a business partner data subset including

- the corresponding addresses,
- contacts,
- connections and
- roles and classifications.

Changes to the business partner will trigger the business partner adaptor to export the data set.

MESSAGE BASED SERVICES**Product MBS adaptor family**

MBS-020/8.5

Product adaptor (OUT)

The message published by this adaptor contains a product's main data set, including

- sets, linked to the actual product and in a separate product message with the sets product list;
- series, linked to the current product and in a separate product message with the series product list;
- parallel versions, linked to the current product;
- related titles, linked to the current product;
- text information for marketing purposes , blurbs, table of contents etc.;
- classification information, like market restrictions and web codes.

Changes to the product will trigger the product adaptor to export the data set.

Product Series adaptor (OUT)

The message published by this adaptor contains a series' main data set, including

- series, linked to the current series;
- products linked to the current series;
- text information for marketing purposes , blurbs, table of contents etc.;
- classification information, like market restrictions and web codes.

Changes to the product series will trigger the product series adaptor to export the data set.

Product Classification adaptor (OUT)

The message published by this adaptor contains the classification scheme for product classification.

Changes to the product classification will trigger the product classification adaptor to export the data set.

Product Price adaptor (OUT)

The message published by this adaptor contains

- price data,
- a reference to the product, and
- product classifications.

Changes to the product price will trigger the product price adaptor to export the data set.

MESSAGE BASED SERVICES**Product MBS adaptor family**

MBS-020/8.5

Product Classification adaptor (IN)

The message expected for this adaptor contains

- product classification information according to the classification scheme, and
- a reference to the product

at edition level.

Product Import Interface adaptor (IN)

The message expected for this adaptor contains

- new product data.

The system automatically saves this data in the product import interface.

MESSAGE BASED SERVICES**Digital Asset MBS adaptor family**

MBS-030/8.8

DAC Product adaptor (OUT)

The message published by this adaptor contains

- digital asset collection (DAC) information for the product, including general DAC information and information about the related products.

Changes to the products belonging to the DAC will trigger the DAC product adaptor to export the data set.

DAC Contribution adaptor (OUT)

The message published by this adaptor contains

- digital asset collection (DAC) information for the contribution, including general DAC information and information about the related contributions.

Changes to the contributions belonging to the DAC will trigger the DAC contribution adaptor to export the data set.

DAC Series adaptor (OUT)

The message published by this adaptor contains

- digital asset collection (DAC) information for the series, including general DAC information and information about the related series.

Changes to the series belonging to the DAC will trigger the DAC series adaptor to export the data set.

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Contract MBS adaptor family

MBS-040/8.5

Contract adaptor (OUT)

The message published by this adaptor contains contract information, including information about

- one contract or a contract unit (of a multi contract),
- the royalty rules,
- installments,
- sub rights and
- the current addendum.

Changes to the contract will trigger the contract adaptor to export the data set.

MESSAGE BASED SERVICES**Sales Data MBS adaptor family**

MBS-050/8.5

Backorder adaptor (IN)

The message expected for this adaptor contains

- backorder information from an external sales system.

The data is automatically stored in the standard import interface for backorder data.

Sales Revenue adaptor (IN)

The message expected for this adaptor contains

- statistical sales information from an external sales system.

The data is automatically stored in the standard import interface.

Stock Entry adaptor (IN)

The message expected for this adaptor contains

- stock movement data from external warehouse systems.

The data is automatically stored in the standard stock entry interface for statistical data.

Feedback from distributor (IN) (version 9.5 and higher)

The message expected for this adaptor contains

- data for distribution messages from an external distribution center.

The system automatically saves this data in the shipping data table.

MESSAGE BASED SERVICES**Workflow MBS adaptor family**

MBS-060/8.8

Event Log adaptor (IN)

The message expected for this adaptor contains the event information of an external system. Depending on the message, the adaptor creates new logs for one of the following objects:

- products,
- Digital Asset Collections (DAC),
- series,
- contribution, or
- production projects.

Reminder adaptor (IN)

This adaptor permits you to create reminders for objects referenced in the expected message at user level. The following objects are supported:

- Digital Asset Collection (DAC),
- product (code),
- contribution,
- series,
- supplier order, and
- production project.

Schedule adaptor (IN)

This adaptor permits you to update schedule tasks for a project or a contribution referenced in the expected message.

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Supplier Order MBS adaptor family

MBS-070/8.5

Supplier Order adaptor (OUT)

The message published by this adaptor contains

- the supplier order,
- data of the referenced products and
- individual instructions.

You have to explicitly initiate this message in the user interface.

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Production Project MBS adaptor family

MBS-080/8.5

Calculation adaptor (OUT)

- The message published by this adaptor contains new and modified production budget data from the standard interface tables.

New calculations that have been exported will trigger the calculation adaptor to export the data set.

Product Cost adaptor (IN)

The message expected for this adaptor contains new product cost data from supplier documents. The adaptor writes this information to the standard interface table CST document interface.

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Online Subscription MBS adaptor family

MBS-090/9.0

Online Subscription adaptor (OUT)

The message published by this adaptor contains

- online subscription data and
- the corresponding business partner information for customers and end consumers.

Changes to the online subscription will trigger the online subscription adaptor to export the data set.

Subscription MBS adaptor family

MBS-100/8.3

Subscription adaptor (IN)

The message expected for this adaptor, regarding the creation of a new subscription order, contains information about exactly one subscription along with references to business partners with the role "Customer (JSD)" and "End Consumer". If the standard data validation is performed successfully, the adaptor writes this information to the tables for the following:

- Subscription order units
- Renewal presets
- Transactions
- Initiated invoices
- Created issues

If the business partner does not yet have the role "Customer (JSD)", the adaptor creates the customer on the proprietor level and writes the information to the tables for the following:

- Customer terms
- Medium terms
- Standard usages

MESSAGE BASED SERVICES**Warehouse MBS adaptor family**

MBS-110/9.5

Stock Item adaptor (IN)

The message expected for this adaptor contains the following:

- information relevant for shipping from an external distribution center concerning products to be shipped (e.g. weight, measurements, packing unit)
- the current stock level for the stock level check.

The system automatically saves the data in the table for stock items and in the product pool. The current stock remains unchanged.

Contacts:

Benelux and Scandinavia

Klopotek BV
Oostenburgervoorstraat 120 -124
1018 MR Amsterdam
Netherlands
Tel: +31.20.5210.070
Fax: +31.20.5210.098
www.klopotek.nl
www.klopotek.be

Contact:
Ernst Lopes Cardozo
e.lopescardozo@klopotek.nl

Germany

Klopotek & Partner GmbH
Schlueterstrasse 39
10629 Berlin
Germany
Tel: +49.30.884 53.0
Fax: +49.30.884 53.100
www.klopotek.de

Contact:
Stefan Jacob
s.jacob@klopotek.de

UK

Klopotek UK Ltd
90 Long Acre, Covent Garden
London WC2E 9RZ
United Kingdom
Tel.: +44.20.7716 5500
Fax: +44.20.7716 5595
www.klopotek.co.uk

Contact:
Vivek Dubey
v.dubey@klopotek.co.uk

USA and Canada

Klopotek North America, Inc.
Global Turnkey Systems, Inc.
2001 Route 46, Suite 203
Parsippany, NJ 07054
U.S.A.
Tel. +1.800.239.9254x101 (toll-free USA/Kanada)
Tel: +1.973.331.1010
Fax: +1.973.331.0042
www.klopotek.com
www.gtssystem.com

Contact:
George Logan
g.logan@klopotek.com
Karen Tiesling
k.tiesling@gtssystem.com

Sales Europe

Carl Mann
carl.mann@klopotek.com