The Role of Business Process Management in Information Governance

Using Business Process Management to Solve Data Quality Issues





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Table of Contents

5 Executive Summary

6 The Interrelationship Between Business Processes and Master Data

Looking at Master Data from a Process Point of View A Typical Master Data Scenario

8 Transitioning to Business-Owned

Information Governance

Growing the Business and Organizing Processes

9 Business Process Management: The Key to Information Governance

The Need for Business Process Management Software

Managing Business Activities from a Process Point of View

11 The Value of Business Process Management for Optimizing Information Governance

Calibrate

Analyze

Design

Implement

Run and Monitor

Iterate and Begin the Cycle Again

15 Part of a Larger Enterprise Information Management Solution

Master data is highly interlinked and referenced by people and processes. This means that data quality issues can have profound effects on the efficiency and quality of your company's operations. To drive efficient, integrated, and agile operations, the people and processes that use master data need an agreed-upon description of each business entity and a clearly defined information governance policy and process.



Executive Summary

Your company's master data, like its business processes, grows organically. As your business becomes more sophisticated in terms of its lines of business, the numbers and types of customers, offerings, and business partners increase. This makes describing and maintaining this kind of enterprise information more complex.

If your company has not invested in developing flexible, well-governed processes for managing its data, this complexity turns into chaos. In some cases, companies haven't thought through governance at all, so there are no consistent processes, business rules, or metadata. Departments and business units may define their own way of handling master data, resulting in large, disconnected caches of data across the enterprise. Information governance may be handled by a global team but be managed as a highly manual process with data request forms being sent through e-mail. In these cases, business units become disconnected from the process of governing the master data that they depend upon. As a result, master data quality deteriorates over time and inhibits a company's agility – for example, by making it difficult to integrate a newly acquired business or improve customer service levels.

When done well, information governance is clearly defined and involves every relevant department and business unit, including the IT department. Ideally, IT supports information governance via enabling technologies, such as intuitive automation, sophisticated monitoring tools, and rolebased applications. These technologies simplify and streamline data collection and information governance by everyday business users. Business process management provides additional tools and methodologies to support activities of business users and IT.

This paper examines the relationship of master data management (MDM), business processes, and information governance. It explores how business process management fits into a flexible information governance process that business users can drive – and IT can support.

The ultimate goal of establishing a master data governance process is to maintain and improve the quality of master data that's available to all applications, business processes, departments and business units, and employees and partners.



The Interrelationship Between Processes and Master Data

Your business is the intersection of people, processes, and information. Processes are the streams of activities or tasks performed by people or software to enable efficient business operations, whether you are a bank, an electronics manufacturer, or a government agency. Information is the lifeblood of your business – the digital data that's created and stored on computers about everything related to your business and its activities. Data is created and used – including master data, which is the data that's intimately connected to nearly all processes that enable daily business operations.

LOOKING AT MASTER DATA FROM A PROCESS POINT OF VIEW

Master data is the essential data that describes your business and the business entities that your company uses, sells, or interacts with, such as customers, employees, suppliers and partners, products and services, materials, and locations.

What makes it "master" data is the fact that it serves as the foundation, or organizing structure, for so many other kinds of information, process behaviors, and organizational structures. For example, a customer is a "business entity," and a master data record for this kind of business entity may include company name, address, phone number, primary contact names and titles, account number, and user name and password for your company's Web site, among other items.

All of this master data is linked to massive amounts of transactional data created within business processes, such as orders, invoices, payment information, production lots, shipping details, and more. It's also linked to other master data, such as products, organizational hierarchies, sales territories, related employees, and shipping and warehouse information.

Because master data is highly interlinked and referenced by people and processes, data quality issues can have profound effects on the efficiency and quality of your company's operations. Problems with the processes that create or modify master data lead to master data problems, such as redundancy, inaccuracy, and lack of completeness, which, in turn, lead to operational problems that hurt margins and competitiveness. To drive efficient, integrated, and agile operations, the people and processes that use master data need an agreed-upon description or definition of each business entity, whether it's a customer, supplier, employee, or product.

LEARN MORE ABOUT MASTER DATA

For additional information about master data and its significance for today's businesses, read the following papers:

- Manage All Your Master Data with One Integrated Solution, available at www.sdn.sap.com /irj/sdn/go/portal/prtroot/docs/library /uuid/e019cf4c-63dd-2b10-a0bf -a5d8d7b4f483
- Master-Data Management: The Lie Detector of Business (click here)
- Matthias Kretschmer and Markus Ganser, Error-Free, Consistent Master Data Starts at the Source (published April 1, 2010, on SAP Community Network, available at www.sdn.sap.com/irj/sdn/go/portal/prtroot (dage (librer), wiid (50ort147, c108, 2d10, librer)

/docs/library/uuid/50cdf4f7-ef28-2d10-1bba _d332f7082032)

 SAP Community Network wiki site on master data management and business process management, available at http://wiki.sdn.sap.com/wiki/display/EIM /Collaborative+master+data+creation+and +maintenance

Because business process management helps companies focus on creating well-defined business processes, it's increasingly being used to help them simplify the growing complexity of their businesses and coordinate the work of the employees and partners.



A TYPICAL MASTER DATA SCENARIO

Let's consider a common example of how these process-information interactions work within a sales department. Sales representatives typically create and modify customer master data as they enter information about new customers. In addition, other business processes, such as those handled by the customer credit department, create, access, modify, and even delete master data. In any case, the steps involved in master data creation, modification, and deletion can be well governed and effective or ad hoc and ungoverned.

The resulting master data – good or bad – is then used within processes as part of activities such as:

- Sales forecasting
- Sales lead routing and tracking
- Sales order creation and invoicing
- Commission determination and payment
- Order fulfillment and shipping
- Customer service

It's easy to see how poor-quality master data can affect the efficiency and quality of your business operations (see Figure 1). Imagine what happens if customer master data entered by sales representatives is incorrect or duplicated by an older entry.



Figure 1: Scattered, Inconsistent Master Data Across All Departments

Does it result in invoicing errors that frustrate customers and hurt your cash flow or in the delivery of orders to the wrong address? Can your customer service staff quickly find the customer's history to expedite service? Can executives create accurate management reports needed to make critical decisions? Can marketing determine exactly who to target for marketing campaigns without sending out duplicate mailers to the same person? Probably not.

It's important to note that even if you take the time to clean up your master data, if you don't fix the underlying processes used to create and maintain it (and clearly define the roles of the people participating in them), your master data quality will begin to decay again.

Business and IT can use business process management to untangle data problems, define and manage governance in the context of the business processes that generate and use such data, and put master data management into the hands of the business.



Transitioning to Business-Owned Information Governance

GROWING THE BUSINESS AND ORGANIZING PROCESSES

To address master data challenges, you need to ensure that an information governance process is in place, one that involves and empowers those who have a vested business interest in ongoing data quality – for example, by having customer contact data vetted by the sales department and customer financial data by the finance department. The ultimate goal of establishing an information governance process is to maintain and improve the quality of master data that's available to all applications, business processes, departments and business units, and employees and partners.

The question is this: how do you help the business units govern master data within their processes, with IT assisting with the appropriate technology? To get started, your departments and business units need to ask fundamental questions such as:

- Do we really understand all the ways that master data is being created and updated? Do we know how duplicates get created and where errors occur?
- Are we governing our information with a process-centric viewpoint that takes into account how our business actually operates?
- Are we defining and automating information governance in relation to our business processes?

There must be close collaboration between the business owners of the master data and

IT regarding how to manage master data creation, modification, and deletion as part of their everyday business processes. From a high-level business process point of view, this means you need to do the following:

- Establish a master data management program supported by a solution – In rare cases, companies can simply designate a single system, such as an enterprise resource planning (ERP) system, as their master data repository. However, when master data bridges more than one system, the best practice for its effective management is to define a separate repository using an MDM solution. The MDM solution is used to manage the "golden record" of business-critical master data, acting as a hub or single source of truth where data is created, updated, and syndicated to dependent databases.
- Establish company-wide metadata descriptions – As part of your central data repository designation step, you need to establish clear rules and descriptions of classes of business objects, that is, your metadata. These global descriptors of data types enable harmonization of data across the enterprise. They encompass the requirements of your various heterogeneous data stores and the kinds of data required by the localities where your company does business.
- Lay out well-defined, adaptable governance processes owned by the business and supported by IT – You need to establish clear, consistent management of master data through enforced

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THE ESSENTIALS OF EFFECTIVE INFORMATION GOVERNANCE

Establishing an effective information governance process can improve the quality, availability, and accuracy of your data by enabling cross-organizational collaboration and policy making. It involves:

- Defining the business goals that you need to achieve around master data
- Understanding the location and importance of your master data
- Determining your key information policies and who governs them
- Identifying where governance activities fit in your business processes
- Specifying who should be responsible for information governance activities
- Defining and implementing a supporting IT infrastructure for information governance
- Identifying key performance indicators and how governance effectiveness is measured

governance (policies, processes, controls, and audits) as well as procedures regarding how to create, update, and make master data available to others while ensuring integrity and security.

The first two steps are typically led by IT, but all steps require the close involvement of departments and business units, as they have a vested interest in ensuring master data quality.



Business Process Management: The Key to Governance

To facilitate collaboration between business and IT, leading companies are turning to a business process management is the practice of defining business processes, describing them in detail, monitoring them with appropriate metrics, and continuously improving business processes to optimize business performance.¹

Because business process management helps companies focus on creating welldefined business processes, it's increasingly being used to help them simplify the growing complexity of their businesses and coordinate the work of the employees and partners. In the case of MDM, business and IT can use business process management to untangle master data problems, define and manage information governance in the context of the business processes that generate and use master data, and put MDM back into the hands of the business. As a methodology, it enables both parties to visualize and define "as-is" and "to-be" information governance for today's digital data environment.

THE NEED FOR BUSINESS PROCESS MANAGEMENT SOFTWARE

When companies are looking to automate information governance in business processes that span many different roles and departments, and there is a requirement to syndicate data between multiple systems, then closer alignment is needed between business and IT. In addition, their collaborative teams need more powerful business process management techniques and tools. In such cases, look for business process management environments that:

- Support the business process modeling notation (BPMN) standard to enable business and IT collaboration
- Support industry standards to simplify system integration
- Embed support for business rules to enable automated processing

Information governance processes must be highly adaptable so that you can, for example, accommodate changes to your organization resulting from a merger or acquisition. Leading business process management tools, such as SAP NetWeaver® Process Orchestration software, employ a model-driven development approach. This means that as your business analysts and developers collaboratively define the BPMN process model for an information governance process, they actually lay out the execution flow for the process automation. Then developers can leverage serviceoriented composition and orchestration to implement process steps through preexisting services provided by the SAP® ERP application, the SAP NetWeaver Master Data Management (SAP NetWeaver MDM) component, and other applications.

At the same time, embedded business rules enable the automation of decisions within a business process, thus allowing automation of common cases and enabling specialists to focus on exceptions and more

THE POWER OF BUSINESS PROCESS MODELING NOTATION

Using business process modeling notation (BPMN), business and IT professionals can jointly describe processes in a summarized, abstract way that can be understood by businesspeople. BPMN is rich enough to describe processes in sufficient detail so that technology specialists can use models to automate processes with technology. For example, you can use high-level models to summarize business processes and then create other models that provide increasingly detailed overviews of processes. The most detailed models have enough expressive power to describe how applications link each process step to a user interface or Web service that helps support the step by providing information or the means to take action.



complex tasks. Embedding business rules also allows for simplification of process flows and concentrates the most dynamic parts of a business process – decision making – into an easily modifiable form.

FOOTNOTES

1. For more information about business process management, refer to *BPM Technology Taxonomy: A Guided Tour to the Application of BPM* (PDF). To view and download, click <u>here</u>.

Business Process Management Methodology

Business Process Management Step	Description
Calibrate	Before you start, take time to understand your business goals and map them to measurable metrics and key performance indicators so you can assess progress toward goals.
Analyze	Perform an "as-is" analysis of your business activities across the enterprise and understand the underlying, real business needs.
Design	Develop your "to-be" process design and supporting IT architecture to transform how work can get done optimally and consistently.
Implement	Rapidly develop a supportive IT implementation, and roll out the newly designed process to the process participants.
Run and monitor	Execute the new processes and constantly monitor their effectiveness, identify and address bottlenecks, and anticipate when the processes may need to be updated.
Iterate and begin the cycle again	Analyze the monitoring data so you can identify opportunities to continuously improve it, as well as adapt your processes swiftly to meet new business needs.

Figure 2: The Process Management Lifecycle



MANAGING BUSINESS ACTIVITIES FROM A PROCESS POINT OF VIEW

As illustrated in Figure 2, business process management helps you institute continuous process improvement for any process by establishing a governance process and driving the process management lifecycle.

An effective business process management methodology – which is based on this lifecycle – can be applied to any business process. This methodology includes the steps summarized in the table above. In theory, no technology is required. Business process management methods keep the focus on the business process as the central concept around which all other management thinking and activity takes place. In practice, however, business process management greatly improves adaptability by properly employing the right IT tools and infrastructure to model process descriptions, automate processes, track metrics, and make the most of existing enterprise applications. All these require technology such as SAP NetWeaver Process Orchestration.

The Value of Business Process Management for Optimizing Information Governance

To better understand how you can use business process management methodologies to set up effective information governance, let's consider a hypothetical example. Assume our case study involves a global manufacturing company serving over 100 markets. Let's see how SAP can apply a business process management methodology to address this company's information governance challenges.

Imagine that management at this company wanted to proactively solve master data challenges while completing a rollout of the SAP ERP application. As a first step, IT and business units use the SAP enterprise modeling applications by Software AG to map their business processes and determine how to establish the governance of information using a single, optimized, global business process.

To address its master data challenges, the company uses SAP NetWeaver MDM as its central data repository, as well as SAP NetWeaver Process Orchestration to support data governance processes driven by business process management. They then apply a six-step business process management methodology to define an optimal information governance process.

CALIBRATE

The organization's goal for its master data initiative is to achieve the highest levels of data consistency and reliability by having common definitions of data across the organization. Achieving this would enable more efficient business processes and faster sales cycles while improving overall customer satisfaction. To monitor progress toward these goals, the company decides to use the following key performance indicators (KPIs) and metrics:

- Process cycle time for creation of approved customer records in SAP ERP and the SAP NetWeaver Business Warehouse component
- Error rates in customer invoicing due to incorrect customer data

ANALYZE

The company's IT department performed a department-by-department analysis of how master data is created and used and leverages SAP enterprise modeling applications by Software AG to document multiple regional processes for master data management. This tool supports BPMN so that the team involved (both business and IT professionals) can identify and agree on the opportunities for automation, measurement, control, and process flexibility.

During the discovery and planning phases of the project, the team members map out a process for managing the creation of customer master data. They determine that:

- This process is unique to their business.
- Many steps in their existing process occur outside the scope of their SAP ERP application.
- They must build in flexibility for ongoing business change.

Analysis of their as-is master data activities reveals a number of redundant, fragmented, nonstandard activities across the enterprise:

- There are multiple "owners" of important master data types (for example, by region and country), which causes confusion, redundancy across different database systems, and hoarding of data.
- IT operational costs are higher than they should be, because master data is housed in multiple repository database systems.

With master data management in place, you can branch out to optimize the processes that consume and modify master data, such as customer-facing business processes and collaborative processes related to product development and definition. ¥

- There are multiple points of entry for master data without any consistent approval procedure, which results in data duplication and incomplete records.
- The company can't track where master data requests are in the processes for creation or modification, nor can it measure process efficiency and effectiveness.
- Because there is insufficient data sharing among systems housing master data, the company creates and maintains multiple versions of customer data, which is causing problems such as impaired customer service.
- There are no official data-publication channels to external parties (for example, for sharing customer master data with logistics service providers), causing delayed shipments.

• The company has no process for delegating and substituting the activities of approvers during their absences.

DESIGN

The manufacturing company then uses SAP NetWeaver Process Orchestration to design a to-be MDM process that will transform how master data is created, maintained, and syndicated across the enterprise. The company uses BPMN, which helps foster the collaboration between business and IT by giving everyone a shared language and documentation approach.

As illustrated in Figure 3, the company's to-be process for customer master data involves the following steps:

- A sales representative or customer service representative initiates a request to create a new customer using a standard template form. The initiator first checks to see if the customer already exists; if not, the representative fills out the form with the necessary customer information, including general data and sales data.
- Sales management reviews and approves the customer's general and sales data.
- The credit and collection group fills out credit terms and data.
- Finance management approves the finance and credit data.
- General customer data is sent automatically to SAP NetWeaver MDM and syndicated to SAP ERP after the last management approval.





- A local master data specialist reviews sales and financial portions of the customer data form for compliance and completion. Then the data is sent to SAP NetWeaver MDM and syndicated to SAP ERP.
- Finally, a member of the global master data team analyzes the newly created customer data and relates this within business intelligence reporting hierarchies so that it is properly incorporated for analytics purposes.

With the to-be process documented, IT can identify the supporting technologies and services required, map the to-be processes to existing solutions and services, and define the to-be system landscape.

IMPLEMENT

Now our hypothetical business can bring its optimized to-be processes to life. The company uses SAP NetWeaver Process Orchestration, SAP NetWeaver MDM, and other tools, infrastructures, and approaches based on business process management that work especially well when implementing a business process management solution.

Typically, an IT implementation for a business process management project leverages agile development techniques such as the scrum approach. Each development cycle addresses a successively larger scope of requirements over a period of several weeks while taking into account new feedback provided by stakeholders.

Typical BPM composition tools provide "model-to-execute" development functionality, which developers and business experts use to collaborate and lay out the

TECHNOLOGY FROM SAP SUPPORTING PROCESS-ORIENTED INFORMATION GOVERNANCE

The SAP NetWeaver[®] Master Data Management (SAP NetWeaver MDM) component and SAP NetWeaver Process Orchestration software provide an integrated, flexible solution for centralizing master data management and extending governance of globally relevant master data into your company's business processes.

SAP NetWeaver MDM supports an approach based on business process management for information governance. This approach uses generators that rapidly create Web-based user interface components for information governance and Web services to automate steps in information governance workflows such as data creation or update. These generated components can then be associated in SAP NetWeaver Process Orchestration to implement steps in a business process model, providing screens for user steps and Web services calls for system steps. For more information on how to leverage the latest release of SAP NetWeaver MDM for business process management, visit the SAP* Developer Network site at www.sdn.sap.com/irj/scn/weblogs?blog=/pub/wlg/17698.

SAP NetWeaver Process Orchestration supports a process-oriented approach to optimizing master data management by helping you model, execute, and monitor your business processes based on a common process model. With SAP NetWeaver Process Orchestration, you can compose process steps, define business rules and exceptions, model process flows using industry-standard business process modeling notation, execute process models, and support interaction with running processes via personalized user interfaces or interactive forms. You can also monitor business processes to improve process quality and efficiency. For more information on how you can improve your business processes with SAP NetWeaver Process Orchestration, visit

www.sap.com/platform/netweaver/components/process-orchestration/index.epx.

process orchestration for the supporting composite application (in this case, for information governance). To implement the process steps mapped out in this orchestration, companies will find their serviceoriented architecture (SOA) infrastructure to be especially valuable. Process steps can be implemented by reusing existing functionality from SAP applications, SAP NetWeaver MDM, SAP NetWeaver Business Warehouse, and other applications involved in the business process.

As is usually the case with an implementation supporting business process management, the hypothetical customer is able to spend a larger portion of implementation time on designing the user experience

than would be possible in a traditional implementation. Typically started as part of the to-be design phase, this user experience design continues into implementation, with developers and business analysts working together with mock-ups and prototypes to jointly create an effective and engaging interface for the process applications' business users. In this context, SAP NetWeaver MDM has been designed to work well as part of a business process management approach. SAP NetWeaver MDM provides code-free generation of user interface components based on Web Dynpro development environment technology that can be directly consumed by SAP NetWeaver Process Orchestration.

Finally, leveraging existing business intelligence and monitoring software already in place, the customer puts instrumentation in place to measure the KPIs and performance metrics once the process is running.

RUN AND MONITOR

The manufacturing company now runs its new information governance process and constantly monitors its effectiveness. Using KPIs to track performance and business impacts, management can now identify and address bottlenecks and anticipate when information governance needs to be updated. The company quickly realizes a number of benefits, including:

- Reduced cycle time due to faster turnaround for master data entry and the availability of new customer data
- Greater customer satisfaction because everyone has access to higherquality customer master data, which enables more efficient and accurate transactions (for example, by eliminating the need to rework sales orders, which causes shipment delays)
- Improvements in analytics, reporting, and decision making, as reports and analyses are now based on up-to-date, high-quality data and employees feel

more confident making decisions based on them

• Lower operational IT costs by consolidating and centralizing all master data to a single database that's accessible globally

ITERATE AND BEGIN THE CYCLE AGAIN

When the manufacturing company is ready to begin the next project iteration cycle, it can compare measured results with its business goals and KPIs. It can then refine its goals, recalibrate measures, obtain feedback, and enhance its MDM processes for even greater efficiency and effectiveness.

By integrating its products in an information management suite, SAP can provide lower total cost of ownership. SAP offers integrated solutions supporting data migration, data quality, data warehousing, data services, and information governance.



Part of a Larger Information Management Solution

The approach to information governance based on business process management described above involves enterprise information management (EIM) strategies and practices. EIM helps organizations govern their information assets in ways that maximize reusability and value to the entire business.

SAP offers a complete EIM portfolio of best-of-breed products in the information management market that address the needs of SAP software–focused environments, as well as open and heterogeneous environments. By integrating its EIM products in an information management suite, SAP can provide considerably lower total cost of ownership. For example, SAP offers integrated solutions supporting:

- Data migration
- Data quality
- · Data warehousing and data services
- Master data management and information governance

For more information about SAP solutions for EIM, visit <u>www.sap.com/eim</u>.

LEARN MORE

The previous hypothetical case study illustrates how many companies are using business process management to address their master data issues. Master data management is an ideal first project for IT organizations seeking to leverage business process management across their business. Once in place, you can branch out to optimize the processes that consume and modify master data, such as customer-facing business processes and collaborative processes related to product development and definition.

For more information about a business process management approach and methods, you can:

- Visit the Business Process Expert (BPX) community at <u>www.sdn.sap.com/irj/bpx/bpm</u>
- Learn about the business process expert certification process at www.sdn.sap.com/irj/bpx/education
- Read the SAP Press book *Business Process* Management – The SAP Roadmap (click here)
- Read the SAP Press book Applying Real-World BPM in an SAP Environment (click here)

To learn about business process management tools provided by SAP, visit the SAP® Developer Network community at

www.sdn.sap.com/irj/sdn/nw-bpm

To learn about other business process management use cases, visit the use case repository at the BPX community at http://wiki.sdn.sap.com /wiki/display/BPMUC/Business+Process +Management+Use+Cases.

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