Management of Global Large IT-Systems in international Companies (MGLIIC)
Lecture – Summer Semester Otto-von-Guericke-Universität Magdeburg

Part 3: Process Modeling and Standards

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Agenda

• Business Processes
• Process Modeling
• Flow Charts
• Process ReDesign and Improvements
• Level of Process Description
• Standard Software and Standard Processes
• IT System Landscape and Standards
• System Collaboration within a landscape
Process Documentation

Processes were used in Applied Chemistry

A **business process or business method** is

- a cluster of related, structured activities or tasks
- that produce a specific service or product
- for a particular customer or user.

It often can be described and visualized

- by a **flowchart**
  - as a sequence of activities
  - with interlaced decision points or
- by a **Process Matrix**
  - as a sequence of activities
  - with relevance rules based on the data in the process.
Process Documentation
There are many methods for Designing Processes

Ref: Sample Google „process map“
Business Process Models consist of simple diagrams constructed from a limited set of graphical elements.

Such Models simplify understanding business activities for business users as well as for IT specialists. They are an important bridge for communication.

There are four basic element categories:
- Flow objects
  - Events, activities, gateways
- Connecting objects
  - Sequence flows, message flows, associations
- Swim lanes
- Artifacts
  - Data objects, groups, annotations
**Process Documentation**  
**Events in Process Flow Charts**

**Event** (circle )

An Event denotes something that does happen - compared with an *activity*, which is something that is done

**Start event**  
... acts as a process trigger

**End event**  
... represents the result of a process

**Intermediate event**  
... describes something that happens between the start and the end events
Process Documentation
Activities in Process Flow Charts

Activity (rounded-corner rectangle)

An activity describes a bundle of work which must be done

Task
... a task represents a single unit of work that is not or cannot be broken down to a further level

Sub-process
... Used to reveal additional levels of business process detail and has its own self-contained start and end events (child process); sequence flows from the parent process must not cross the boundary.

Transaction
... a special sub-process in which all contained activities must be treated as a whole; i.e. they must all be completed to meet an objective, and if any one of them fails, they must all be compensated (undone).
Process Documentation

Gateways in Process Flow Charts

**Gateway** (diamond )

A gateway contains one or more conditions and causes forking and merging of paths, depending on the result of the conditions.
Process Documentation
Flows in Process Flow Charts

Flows (arrows, dashed arrows, dotted lines)

Flows are connecting objects – they are of three types: sequences, messages, and associations.

Sequence Flow (arrow)
A Sequence Flow shows in which order the activities are performed.

Message Flow (dashed arrow)
A Message Flow tells us what messages flow between different activities.

Association (dotted line)
An Association is used to associate an Artifact or text or an annotation to a Flow Object.
Lanes (bundling flow objects in a row or in a column)

Lanes used to organize and categorize activities according to a function or a role.

Pools are bundles of Lanes.
1. IT Systems and Transaction are
   • working in dialogue with a human role or
   • they are handling one or more activities independantly

2. IT System is often a landscape of different IT-Systems, mostly communicating among each other.

Therefore

**In a Process Flow the different IT Systems can be integrated as separate swim Lanes.**

You can also differentiate one IT System in different roles/swim lanes – but be careful -...
Process Documentation: Example and Link

Where you can find nice examples:

http://www.ariscommunity.com/aris-express/tutorials

Ref: Wikipedia: Swim Lane
Process Documentation:
Extract of the HR Process Landscape in a company

<table>
<thead>
<tr>
<th>Process</th>
<th>Subprocesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manage employee relations</td>
<td></td>
</tr>
<tr>
<td>Manage employee development</td>
<td></td>
</tr>
<tr>
<td>Train employees</td>
<td></td>
</tr>
<tr>
<td>Assess learning &amp; development needs</td>
<td></td>
</tr>
<tr>
<td>Plan, source &amp; develop training content</td>
<td></td>
</tr>
<tr>
<td>Manage course catalogue</td>
<td></td>
</tr>
<tr>
<td>Plan &amp; schedule training program</td>
<td></td>
</tr>
<tr>
<td>Conduct &amp; manage employee &amp; management training plan</td>
<td></td>
</tr>
<tr>
<td>Manage training financials &amp; invoicing</td>
<td></td>
</tr>
<tr>
<td>Manage training &amp; evaluation</td>
<td></td>
</tr>
</tbody>
</table>

4. Reward and Retain Employees

<table>
<thead>
<tr>
<th>Subprocesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manage and administer reward</td>
</tr>
<tr>
<td>Manage and administer benefits (subprocesses)</td>
</tr>
<tr>
<td>Manage employee assistance</td>
</tr>
<tr>
<td>Manage payroll</td>
</tr>
<tr>
<td>Prepare payroll run</td>
</tr>
<tr>
<td>Process payroll run</td>
</tr>
<tr>
<td>Process end-of-period adjustments</td>
</tr>
<tr>
<td>Annual processes</td>
</tr>
<tr>
<td>Manage and administer pensions (subprocesses)</td>
</tr>
<tr>
<td>Administer Deferred Compensation and Einmalzahlung</td>
</tr>
<tr>
<td>Altersversorgung</td>
</tr>
<tr>
<td>Administer matching contribution</td>
</tr>
</tbody>
</table>

ra. 60 - 80 HR processes
Local or global
For every IT Project there is a business need:
Mostly Process Improvements or Process ReDesign are required to reach
• cost savings
• higher quality
• legal requirements
• new business
• …
In most cases there are
no or no sufficient or no consistent documentations of
• Processes
• Supporting IT-Systems
• Maintaining Procedures … etc.
You can model processes on different levels

- **Top-Down-Method**
  first level, second level for more details ... etc.

- **All process details can be documented and described within a process flow (puristic approach)** – but then you lose overview and the sense for understanding – you are lost in pictures, symbols and levels.

- **Therefore: combination of flows and listing and verbal descriptions for documenting special details**

- **Best practice:**
  - 3-4 level approach
  - Not more then 10 roles/swim lanes
Process ReDesign / Improvement
AS IS Analysis: weaknesses

Process and Data Modeling is one of the most important steps to reach an overview about AS-IS but also to find out:

• What are historical activities no longer needed (events and results have no connection)?
• Which activities are redundant, which - may be - are even conflicting (infinite loops, ...)?
• Which roles do exist (Swim lanes) and are the role definitions correct and according to Organizational Design?
• Which processes are highly complex and could be simplified (e. g. too many swim lanes, to many forks and lanes crossings, ...)?
• Overload or underload of capacities?
Process ReDesign / Improvement
AS IS Analysis: non harmonized landscape

Process and Data Modeling across organizational units, companies and across countries and regions are creating more opportunities
• for standardizing and harmonizing or
• there are showing and making transparent reasons for needs of differentiations.

In large environments:
e. g. for one business segment / or functional unit (F&A, Procurement, HR, Sales, ...) there is
• a cluster of ra. n processes
• with variations of companies (10-20) and
• with variations of participating countries (20-30)
... there exists at last possibly 200 - 400 versions for ONE process.
Process ReDesign / Improvement
TO BE Design: Harmonizing + Standardizing

Therefore it’s simple to understand:

Harmonizing and Standardizing is a question of survival!

... not only for surviving but also ...

• for creating comparability
• for generating synergies and saving costs
• for implementing group strategies
• for being independent of locations, regions, countries, ...
• ...
On the other hand:

Opportunity to make clear whether there are really reasons to allow and design exceptions .... based on

- Legal requirements
- Business needs
- Location dependencies
- Work council agreements
- ...

Process ReDesign / Improvement
TO BE Design: Harmonizing + Standardizing
Example for HCM (Human Capital Management):

PayRoll: local process –

  depending on country conditions and on legal and tax requirements
  i. e. standardized on country level

Recruiting: global process for global groups –

  from a strategic point of view
  • you need in a global group an international crew
  • you need the best people independent of language, culture and provenience
  • you benefit from international and intercultural KnowHow and team spirit
  • The market of talents is not restricted by borders – talents are thinking and behaving on international level
  • ...
Example for HCM (Human Capital Management):

Training: there we need a differentiation

- Content Design of Trainings may be very specific depending from location and legal restrictions (e.g. France oder GMP relevant trainings) - therefore local process
  - Exception: Management Trainings for upper Management and Executives: to be designed on global level

- Training Administration can be designed on a global level with some special exceptions (such processes are called „uniform“)

- Personal Training planning within Personal development this process can be designed without any differentiations for countries and companies and businesses: global process
Standard Software offers standard solutions
If documented and delivered:
   You find two manners of process descriptions:

1) High Level Process description:
   use it as a first approach on highest level

2) Detailed Process description with only some degrees of freedom:
   take it as Best Practice Model – don’t modify it only within the given framework
Process ReDesign / Improvement
Standard Processes and IT Solution

If Business is requiring standardized / global Processes – how to realize and to secure this requirement in IT Solutions?

After mapping the process designs into IT Specifications there is a relationship between

\[ \text{Process Design and Process Rules and Application Guideline} \leftrightarrow \text{IT Routines and System settings (customizing) and System Data} \]

i.e. you need mandatory routines, settings and data
Given a distributed architecture of different functional and technical IT systems

• Defining mandatory settings
  – on general level
  – on functional level
  – without any conflicts or minimal conflicts among each other

• Defining a leading system for every cluster of mandatory settings (i.e. on the business side: a responsible business unit)

• Defining and implementing synchronization procedures between the systems

• Defining and implementing synchronization controls for the whole landscape

• How to handle conflicts? (decision board)

• How to maintain Mandatory Settings?
Process ReDesign / Improvement
Mandatory Settings - examples

- Posting periods
- Ranges of data values
- Roles and Access Rights
- Authorization Management Rules
- Posting rules
- Tax calculation rules
- Valuation rules for goods
- Documentation policies
- Archiving policies
- Exchange Rates Rules (which rate is taken in which case ...)
- ....
Given a distributed architecture of different functional and technical IT systems

- Defining Master Data Entities
- Defining Master Data value ranges
- Setting Up a Master Data Server for all Master Data Clusters (i.e. on the business side: Master Data Owners for each Master Data Cluster)
- The Master Data Server is the leading system for Master Data
  - it pushes the Master Data or
  - the Master Data will pulled out
- All linked Systems are not allowed to maintain Master Data being distributed by the Master Data Server
  (This rule is also an example for a mandatory setting)
Process ReDesign / Improvement
Master Data - examples

• Chart of Accounts
• Debitors and Creditors
• Company Codes
• Currency Keys and Currency exchange rates
• Country Keys
• Product Keys for own products and for procurement
• Cost Center
• Personnel Number
• BIC, IBAN, ....
Given a distributed architecture of different functional and technical IT systems

- On every system transactions are performed
- The transaction are producing transactional data
- Selected transactional data are relevant for other partner systems within the landscape – maybe not 1:1 but n:1 (e. g. as daily or monthly sums ... etc.)
- An intelligent Interface Concept is needed for exchanging transactional data among IT systems
- Shadow functionality is needed (i. e. synchronized copied functionality in partner systems)
Process ReDesign / Improvement
Workfield Concept for SAP – the idea

For big global groups one global SAP ERP System is to complex – it can not be handled.

Question: how to separate systems?

Idea: creating workfields according to the business functions and the different business units:

– Finance@Accounting
– Procurement
– Plant Maintenance
– Treasury
– Logistics (Sales and Production)
– Production Planning
– Human Capital Management
– Master Data Management
– ...

For every Workfield there are implemented one or several SAP Systems
Process ReDesign / Improvement
Workfield Concept for SAP – the interfaces

Interface Management in a Workfield Landscape:
For data: Distribution of Master Data (1 -> n)
For transactional Data (n -> m):
   a harmonized concept was needed

SAP Solution: Application Link Enabling (ALE)
   not only sending transactional data from SAP System A to
   SAP Systems B, C and D, but also providing the so called shadow
   environment in every served SAP System

examples:
   – Workfield Procurement delivers purchased material to the Workfield Logistics and
     Material postings to the Workfield Finance & Accounting
   – Workfield Human Capital Management delivers Payroll Postings to the Workfield
     Finance & Accounting
   – ....
Interface Management in a Workfield Landscape:

- ALE was in a very early state of maturity during the Bayer Program for Introducing worldwide standardized processes and supported by the standard software SAP.

- Therefore Bayer started a proof of concept for ALE the so called VerDi Project (Verification of Scenarios in a Distributed Landscape).

- Mainly for the FI/CO Workfield but also for the other interfaces the ALE scenarios were tested:
  - together with SAP AG,
  - External and Internal Auditors and
  - the involved departments@Bayer.
Process ReDesign / Improvement
Workfield Concept for SAP – the proof of concept VerDi – p 2

Interface Management in a Workfield Landscape:

• Results:
  – ALE concept was based on business scenarios securing the synchronization of different workfields
  – Some important improvements are developed and realized by SAP (e.g. the sequence methodology: which IDOC (intermediate document) has to be sent after or before another)
  – ALE was and is a sustainable communications solution between different SAP systems – it should be one of the basic components of the Workfield Concept

• In the meantime until today:
  – ALE is a mature and a reliable solution
  – ALE is a standard solution
Process ReDesign / Improvement
SAP Architecture in big companies

There is a history of Implementation Models in big companies – based on lessons learnt:

1. One Super SAP Integrated System for all business processes in a Company and a Global Group

2. Lessons Learnt: too complex for a global player
   – Operating with more than 200 companies
   – In more than 50 big countries
   – with heterogeneous business in several business units

Solution: SAP Workfield Concept

3. Organisational Set Up follows Business – i.e. the different Business Units becomes their own Business Groups within own legal structures headed by a strategic Holding and enabled by internal Service Companies:
Process ReDesign / Improvement
SAP Architecture in big companies

i.e. the so called Service Functions (as F&A or Procurement ...) are now part of separate Legal entities and the Workfield Concept was removed by Global Systems for every TK (Business Group) including all functions and every Service Group – with one exception: Human Capital Management (capsulated, Data Privacy, ...)

4. In some countries we find only one Legal Entity managing all the business for all Business Group – how to handle this on system architecture side?

– One SAP System approach (OSA), if there is no production site (OSA = one global system for all small companies)
– Combined System Approach (CSA), if there is a production site in this country (CSA = the central functions (e.g. F&A) for the one company a taken over by one of the Global BU Systems – according to the major user principle)
Thank you

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