

Business Process Automation



Digitalized “Purchase to Pay” processes in Supply-Chain-Management

*Application description
Summary*

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- Preamble

As an IBM business partner with many years of IT project experience in all areas of supply chain management, we have taken up the task of “Purchase to Pay” and developed a comprehensive application suite under the name of “**Business Process Automation**” (hereinafter BPA), which map these processes in a complete and integrated form as **web & workflow based IT solutions**.

- Integrated overall process

“Purchase to Pay” – this term generally stands for the entirety of business processes, “from procurement to payment.” These are usually characterized by a flood of outgoing and incoming documents involving considerable organizational, manual and, last but not least, personnel expenditures. Thanks to the use of Document Management Systems (hereinafter DMS), combined with IT support for sub-processes, partial improvements are to achieve, but however, the real challenge is the integration of all business related documents – **and in particular their digitalized metadata** – into a complete and integrated overall IT process.

- Basis for compliance and controlling

An essential feature of these “Purchase to Pay” processes for a company is the entering into financial, contractual, and legal obligations, why the basis for this is usually an internal application, review, and approval process. Another closely related feature is the ability to set and track standards and rules in terms of compliance and controlling as the basis for a structured, regulated, and documentable business transaction. In addition to operational and administrative processing, these “strategic” requirements constitute the focus of the DAC application suite and give management and controlling extensive and transparent options for controlling and influencing operational business processes.

- Setting clear objectives and implementing them

To implement this diverse and complex set of requirements, DAC has defined the following objectives and transformed them into concrete IT solutions:

- Ability to be integrated into any IT infrastructure and ERP/financial systems (with accessible and functional interfaces)
- Unlimited availability in terms of location and time thanks to web implementation (web browser only, i.e., simple rollout/use wherever there is web access)
- Process-dependent workflows that can be defined individually
- Coverage of all sub-processes, availability of all data, and complete integration of documents into the business processes (integrated DMS)
- Use of “paperless” processes and communications
- Unlimited scalability (clients, users, data, documents)
- Multiple clients/currencies/language interfaces/country versions for international use

The IT platform for the applications is the *IBM Power Systems* family of server computers with its proven, uncomplicated, and integrated infrastructure for database, application, and web services. For application users without this IT infrastructure, DAC provides different customer specific “system service providing” solutions. The web-based communication and workflow functions use the customer's own networks.

The *DAConsulting* BPA application suite consists of the (partly optional) application areas (in logical order)

- Purchase Requisition (hereinafter PR) and Procurement
- Contract Management System
Administration/management and controlling of contracts of all kinds with integration into the invoice verification system
- Incoming document processing/invoice verification

which map the “Purchase to Pay” processes in their entirety.

These specialist applications are supported by a number of integrated sub-applications and tools, such as

- Document and input management
- Process-dependent, web-based workflow engine
- Integrated Document Management System/archive
- Integrated tool for evaluations, data-mining and reports (top down analysis)

Application description

- Purchase requisition (PR) and procurement

The PR/procurement application is supporting the procurement processes for

- NPM (“non productive materials”, not automatically scheduled by ERP-systems)
- Services
- Investments

PR gives the “requester” a helpful tool to define their requirements for materials, services, and investments (investment request). It also allows general stored material and service catalogs to control and to simplify the requests.

As a process that creates obligations, PR is usually subject to a review and approval process, whereby the workflow that is used can be controlled via freely definable criteria, e.g., the amount of the application value, product category, organizational unit, etc., or any combination of these.

The ability to allocate budgets at the purchase requisition level (not at the level of already ordered/fulfilled/invoiced requests!) enables an effective cost management and controlling.

After it is approved, PR is transferred to an integrated procurement process, where further additions and changes can be made by the purchasing department. For example, the supplier or service provider can be selected/changed to fully utilize quantity contracts, to optimize quantities/prices, etc.

To use **existing procurement functions in ERP systems**, the PR order data can also be transferred to the general procurement processes of these applications.

- **Contract Management System**

A significant part of the business procedures is determined by business processes that are directly or indirectly related to contracts of any kind. This applies not only to the legal content of contracts, but also in particular to the commercial content, such as prices, conditions, dates, terms, notice periods, obligations, etc.

Despite this influence of contracts on the company and the business processes, the information about the existence, status, content, and effects of contracts are often not known in general and can only be researched within the company organization with considerable effort. The objective of this partial application is to ensure company-wide transparency for all contracts and their content as well as an authorized access..

All required contract information, such as contract partner, contract type (rental, lease, maintenance, etc.), dates (start/end/term, etc.), termination modalities, values (prices, etc.), risks, and other factors are stored into the integrated “Contract database” and linked with the PDF file of the contract document in the general DMS. This contract data forms the basis for comprehensive and transparent **contract controlling**.

- **Incoming document processing / invoice verification**

The basis for incoming document processing and invoice verification is the digital integration of the incoming documents and their metadata into the IT and the business processes. For this the DAC system offers the following options:

- Scanning (creating a PDF) in connection with OCR data capturing of incoming paper documents
- Receipt of documents (e.g., invoices) as **e-mail attachments** (usually PDF files) with the subsequent process for OCR data capturing (as above)
- Receipt of **document data** (e.g., invoice data, where the PDF documents are linked) by digital communication with suppliers

This means that OCR data capturing is no more necessary, and the invoice data are immediately available in digital form for further processing without possible OCR interpretation problems. This method can be used on an individual basis, such as CSV or XML files, or as part of standard communication procedures (different EDI standards).

Invoice references to triggering business processes

In addition to invoices that are relatively easy to verify with clear and transparent content, the verification of extensive and complex invoices (e.g., multi-page/multi-item, complicated pricing) is usually a complex process that requires a reference to the triggering processes with quantities, prices, and conditions in order to ensure correct processing.

These references are usually included in orders, delivery notes, "proof of achievement" records and other documents. In case of invoices that are linked to contracts, the contract with its content - stored in the integrated contract database - forms the basis of the verification.

Here, the DAC BPA system offers essential support by integrating these reference information, available from the sources

- Customer ERP systems (e.g. Infor XPPS/XPERT, SAP and others)
- DAC Contract Management System
- DAC PR/procurement

enabling a transparent comparison of the information relevant to the invoice verification.

To highlight is the feature, in addition to a 1:1 invoice/order relationship, the item-by-item references of an invoice to different orders/delivery-notes.

Interfaces to ERP and finance systems

Invoice reference information in the ERP systems are accessed based on the digitalized information (as creditor, order number, delivery note number, contract number, or other relevant key information) from the invoices by using the methods mentioned above (OCR data capturing / EDI communication).

In addition to the information which are essential for invoice verification, such as prices, quantities, and conditions, the account assignments for attribution objects, such as cost type, cost center, cost driver, project, etc., are also taken from the ERP system, where these assignments are usually stored in the orders. If they are not stored, only partially stored, or stored incorrectly, they can be supplemented and corrected in further processing steps.

DAConsulting GmbH provides these interfaces for different ERP and financial systems as part of the overall solution and IT project.

Presentation of needed information to support invoice processing

Basically, the DAC system offers an "**accounting view**" of the invoice verification at invoice or invoice item level, which primarily shows prices, account assignment and conditions, as well as an extended "**verification view**" with the simultaneous display of all information relevant to price/quantity differences and their verification. In this view – usually used by the purchase department - both the data source (e.g., invoice, purchase order, goods receipt) and the corresponding values (quantities, prices, and variances) are shown.

If the quantities, prices, and conditions match the order-/goods receipt reference information, the invoice or invoice item is set to the status "correct" and can be processed further in accordance with the organizational rules, which it is usually the transfer to financial accounting for posting and payment.

In the event of deviations between the invoice/item and reference information in the purchase order and goods receipt (quantity/price differences), organizationally defined actions, such as accepting a quantity difference, completing the order or order item in the ERP system, and/or creating a debit note or credit note may be carried out.

In addition, the DAC BPA system offers the following helpful functions for invoice processing:

- Automatic allocation of amounts (from invoices, credit notes, debit notes) to different attribution objects (cost centers, projects, budgets, etc.) using stored distribution keys (e.g., as a %)
- Transfer of prepared accounts from an EXCEL table (copy/paste), e.g., distribution of phone costs to different cost centers.
- Copying of account assignments from "historical" documents
- Cross-client account assignment
- Invoicing of amounts/partial amounts to other companies or externally
- Generation of follow-up documents, e.g. Debit- / Credit notes
- The ability to "attach" additional documents (PDF, EXCEL, etc.) to a document during processing
- "Scrolling" through documents, e.g. in a payment proposal list or other sub-list
- Setting of posting blocks/payment blocks for invoices
- "Discount traffic light" to visualize the discount conditions/status of invoices
- With authentication: Adding/changing of account assignments in the workflow process

Synchronization of the data in the ERP systems with the DAC BPA system

The account assignment and other information for invoice processing generally are related to the master data of the ERP Systems and financial systems (creditors, debtors, accounts, cost centers, and other attribution objects as well as payment terms, etc.), which are periodically transferred to the DAC System via an automated data interface.

This means that effective account assignment methods are available (automatic assignment, selection of permitted values from stored tables, drop-down menus, generic search functions, etc.), what is excluding the entry of invalid values.

- **Workflows as an essential element of process control**

The instances (organizational units or specific persons) involved in the course of an invoice review and approval process are mapped in workflows. They use the customer intranet and are therefore available company-wide.

The content of the workflow – depicted in an informative and editable web screen, showing the digitalized process information in combination with the PDF of the documents - can be viewed in a simultaneous display (split screen or across two screens). Also are shown the previously addressed and subsequent workflow instances.

Furthermore, the system allows to input comments (e.g., processing instructions) as well as to “attach” documents, e.g., PDF, WORD, and EXCEL files, on each workflow instance. With the appropriate authorization, one can change preset values and add additional account assignments and similar.

Predefined workflows are always processed mandatory and automatically, which means that prescribed verification procedures (X-eye principle) can be addressed and documented. Alternatively, workflow participants (organizational units or specific persons) can also be addressed directly from stored drop-down lists. All criteria relevant to control workflows are stored in tables, which are defined and maintained by the user (usually a supervisor task).

- **Integrated Document Management System (DMS)/archive**

In addition as its role as the fully automated and integrated DMS to support the entire IT and business processes, the *DAC BPA* system also offers extensive options for integrating documents into the business processes.

Capabilities of the DMS (excerpt)

- Process-related consolidation of different types of documents in individually defined “folders” or “files”. Examples: Sales files, customer files, purchasing files, personnel files, project files, etc., in which all the relevant document types for a corresponding process are stored.

- Creation, indexing, and organization of any document type

This function offers the ability to freely define document types of any kind - independent of the document types used as standard in the *DAC BPA* system (invoices, etc.) - and their **automatic indexing**. In accordance with the ability to define any “folders” you can quickly utilize the DMS also on an individual base.

- Document archive

In addition to its function as the DMS in process management, the system can also be used as a **document archive** in accordance with fiscal requirements and guidelines.

The export of documents to other DMS systems also enables existing customer DMS to be used in coexistence.

- Conclusion

The *DAC-BPA* application series offers a platform to map the business and administrative processes in supply chain management in an integrated and complete form in terms of “Purchase to Pay” processes. The necessary data integration with existing ERP and financial systems is based on automated interfaces, also simultaneously parallel with different ERP and financial systems. This gives the chance to integrate an inhomogeneous company IT/application structure in relation to a standardized and centralized invoice verification processing (e.g. a company wide “Shared service center”).

In addition to provide the software-functionality of the application, a main focus is on “automation through digitalization”, transparency, controlling, and compliance.

The basically industry-neutral design of the applications in connection with the fact that they can be highly customized to suit individual company-specific requirements gives you the flexibility and security to implement new and future processes and forms of communication.

As the author, developer and owner of these applications, *DAConsulting GmbH* has many years of extensive project experience with international operating customers (e.g., automotive industry) and guarantees competent implementation in conjunction with comprehensive organizational advice and support over long-term use.

- Additional applications of the DAC BPA application suite related to “business process automation”:
 - Customer complaint processing (which is relevant to the automotive industry, for example)
 - Digitalizing customer debit notes
 - Generation of debit note postings
 - Process control through workflows for documentation/review/approval
 - Travel expenses and general refund management
 - Travel requests
 - Capturing of travel data (by travelers themselves or through assistance)
 - Travel costs accounting
 - Compensation
 - Process control through workflows for documentation/review/approval