

ISIS Papyrus Focus Report

Document Capture Solutions



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Papyrus Capture

Understanding your Documents

To make **valuable, business-critical information** on incoming business documents (order forms, application forms, invoices, money transfer forms, questionnaires, e-mails etc.) accessible to a company, conversion to electronic data is mandatory. Cost and time involved in manual data entry constitute the major part of document processing overall costs. Successful business automation can only take place once the content (data) is electronically stored in and available to the IT system as coded and uncoded information.

Intelligent document capture with **Papyrus Capture** provides a wide range of capabilities that automate, speed up and streamline information capture and integrate accurate, validated data into any line of business applications. **Papyrus Capture** is a flexible platform for efficient high end utilization of all capture related processes including solutions requiring

document classification and extraction of unstructured data, e.g. invoices.

The individual steps involved within data capture including scanning or fax import, classification of business documents, recognition of data, validation and data export. These have been fully automated within **Papyrus Capture** which employs advanced AI-technologies, such as Machine Learning, Neural Networks and a sophisticated level of Image Processing -, Character - and Content Recognition - Technologies. The user and administrator functions can also be used on zero-install-clients within the Intra - or Internet by standard Web Browsers.

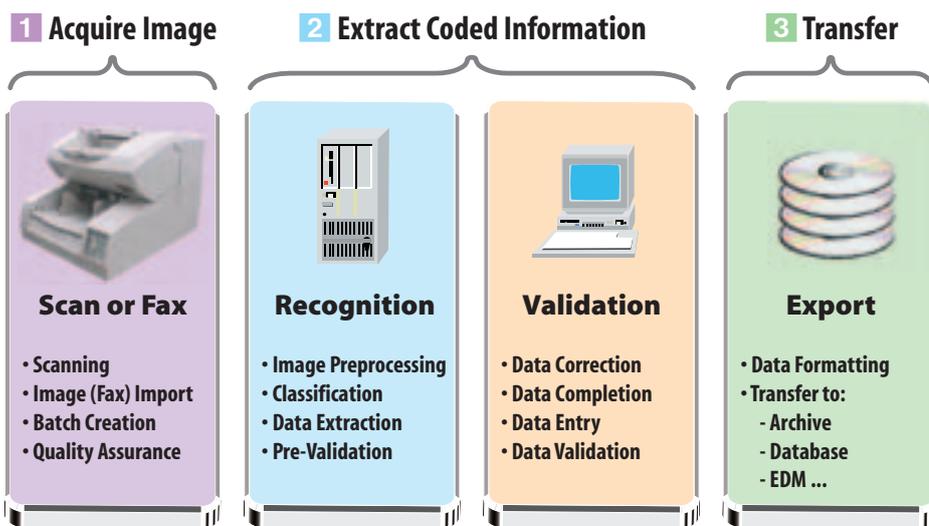
The case studies in this Focus Report demonstrate an extract of the manifold and highly demanding company solutions solved by **Papyrus Capture**.

Advantages

The efficient capture of large quantities of printed documents greatly reduces costs resulting from labor and time intensive manual data entry. Papyrus Capture allows for a typical system pay back period of 6 to 12 months based on the following advantages:

- ▶ **Speed** - substantial acceleration of the document transformation process, data become available faster
- ▶ **Cost** - drastic reduction in the cost of data capture and data entry
- ▶ **Quality** - improvement of data cleansing through automatic plausibility checks (fuzzy context validation)
- ▶ **Versatility** - access to data from archives and work flow systems
- ▶ **Scalability** - Papyrus Capture can easily be customized and grows with the requirements, from a standalone desktop system to high performance forms processing solutions for several hundred thousand documents per day.
- ▶ **Additional benefits** - a higher percentage of a company's stored data is available to the ongoing processes

Process



Modules & Functionalities

- ▶ Papyrus Capture
- ▶ Papyrus Scan
- ▶ Papyrus Classify
- ▶ Papyrus FixForm
- ▶ Papyrus FreeForm®

Applications

- ▶ Mailroom Processing
- ▶ Campaign Management
- ▶ Forms processing
- ▶ Invoice Data Capture
- ▶ Payment Transactions

Technical prerequisites

Papyrus Capture products support the current scanner models, run on PC and Server industry standards and do not require any particular hardware.

The Challenge

The reading of electricity supply meters and other types of energy by utility company personnel is both labor intensive and costly. In rural areas the meters are often remotely situated and in urban areas gaining access is often a problem.

Papyrus Capture for Energy Utilities

Customer self-reading of supply meter for electricity

■ The Solution: customer self-reading

Progressively, many utility companies are replacing the reading of supply meters using Internet reporting methods directly from its customers' self-read returns. The customer receives the meter reading card and completes the figures indicated on the meter. Whenever there is a change in ownership, together with the occasional random sampling a utility company's representative will read the meters to provide assurance of reasonable coherence within the readings. The savings in expenditure as a result of adopting these self-reading and direct electronic reporting methods provide an ROI of an automated capture solution within only a few months.

■ Scanning

The reading cards are scanned in a mail room using a high volume scanner.

■ Import and Recognition

The image files are automatically imported into the document capture system and the content of each pre-defined field is read. Read rates of greater than 97% are achieved when reading the handwritten numeric characters. The remaining questionable fields are marked for later verification. To ensure that no false data gets into the database, numerous plausibility checks are integrated. For example: if the meter reading figure deviates beyond the estimated range of variance the document is forwarded to the correction and verification workstation.

■ Verification & Correction

Tariff group staff within the "Correction and Verification" section only need to deal with rejected character reads or those failing the plausibility checks. The validation data and contextual information used for plausibility checks are being retained within SQL-databases. (e.g. Oracle, SQL Server, etc.)

Documents that cannot be corrected or verified immediately (e.g. customer needs to be contacted) are suspended and forwarded to an exception item workstation or to a manual process for on-going processing.

■ Data export

Once the documents are validated they are automatically forwarded for export whereupon the export files are transferred to the host applications. The export file formats are being prepared for direct entry into a database or "flat files" for upload by the host application. At the same time text and image files are prepared for archiving and other defined tasks.

■ Additional applications at energy suppliers

De-regulation within the electricity marketplace and other utilities in Austria has caused energy suppliers to place more emphasis on marketing activities to retain existing customers as well as to acquire new ones. Knowing the capabilities of Papyrus Capture, many of these utility supply companies are extending the applications to include capture of returns of their marketing campaigns. These applications benefit from the integrated analysis within the capture processes of Papyrus Capture resulting in quicker access to the returned marketing information and significantly reduced costs of capture.

Utility References

Wienstrom GmbH
Energie AG Oberösterreich
EVN
KELAG
STEWEG
Salzburg AG





An average of 25,000 invoices daily from insurance clients and physicians represent a substantial volume of information. Only recently have the technology and tools been available to automate the process of information capture.

Papyrus FreeForm® technology extracts the key data of each invoice, such as insured client, date of treatment, amounts involved. Due to adaptive document understanding functions and precise recognition it is even possible to automatically capture every single service item position, plus additional service related information. The details provided by Papyrus Capture with FreeForm® allow for consistent and objective revision of the positions on the submitted documents.

Physician statements – Extraction of every detail

The Requirements

The insurance company Sanitas is dealing with peaks of up to 30,000 invoices from physicians and laboratories daily. The requirement was to extract relevant invoice information of the insurance customer's reimbursement claims. Clearly, a capture power tool was required to provide a responsive service to its clients. However, each supplier tends to have a unique invoice format which makes the content search a significant challenge that could not be met by a conventional "bottom-up template-driven" approach. Furthermore, the information of interest is frequently printed in small font size and not within constrained areas on the document.

The Solution: Papyrus FreeForm® for Invoices

From previous experience Sanitas selected the solution supplier based upon the benchmark of a pilot project. Papyrus Capture clearly won the benchmark through its high flexibility, easy training and excellent recognition results.

Papyrus Capture with embedded FreeForm® technology searches for and extracts the relevant information from each invoice.

When introducing the Papyrus Capture solution savings were realized immediately and the costs of the document capture system was recovered within only a few months, especially due to easy revision of positions.

Complex sample document

Functionalities

Logical definition libraries were initially created by ISIS Papyrus comprising document patterns with basic document types and their respective information fields requiring extraction. Then the expressions and descriptors required for the "Extractor definitions" were generated by training from samples of each document type (document class) using a "learn by example" approach.

Each position is found automatically and then validated and transformed for consistency with the information held on a master database. This normalization of notational variance and uncertainties created within the text recognition is achieved using 'Fuzzy-logic' matching technology.

Production Process

Image and Data Capture

The incoming invoices are scanned in both sorted and unsorted batches using a high performance Kodak document scanner.

Images of the documents are transferred automatically within the system for classification into document type and the extraction of their contents of interest.

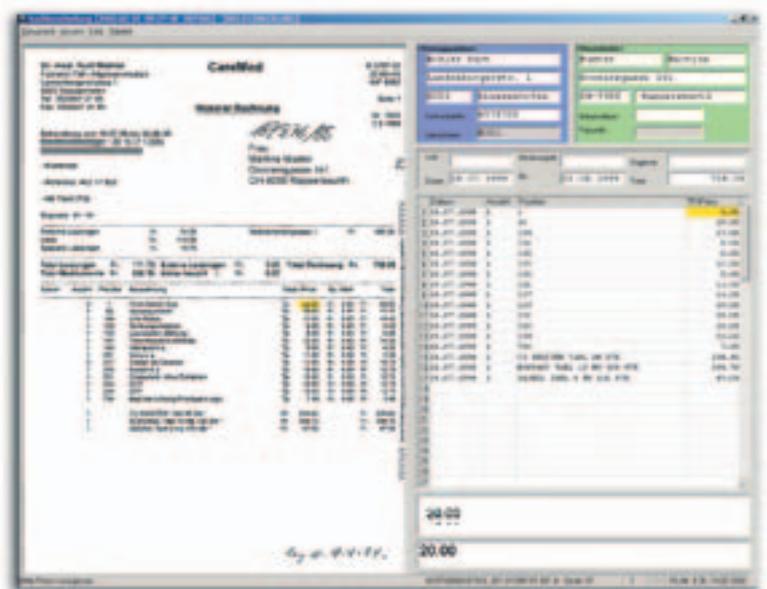
Verification, Correction & Export

Staff within the verification group deal only with the exception documents, e.g. uncertainties raised during the recognition process or non-compliance to the business rules.

The processed document batches are then exported automatically to the host system. During this stage the data for processing claim settlements are transferred via ODBC into a DB2 database and from there into the Sanitas system "Heureka plus".

The information contained within the statements/invoices are analyzed and checked for plausibility e.g. policy coverage, scope of benefits provided, etc.

Controlled by a workflow system, the document images are presented to the responsible official for finalization.



Papyrus Capture Verification Mask

The Sanitas Group ...

... consists of five stock corporations, offering basic insurance services through the corporations 'Sanitas', 'Wincare' and 'Compact' and additional complementary insurance services through 'Sanitas' and 'Wincare'. Insuring more than 800,000 people for a policy volume of more than CHF2.3 billion (Swiss francs), Sanitas is one of Switzerland's largest health insurance corporations.



The Customer

A1 Telekom Austria is Austria's leading provider of telecommunication services, encompassing 5 million mobile communications customers and 2.3 million fixed access lines. Customers benefit

from a global package of offers for voice telephony, Internet access, data and IT solutions, value added services, wholesale services, to mobile business and payment solutions. A1 Telekom Austria is part of the Telekom Austria Group – a

leading telecom provider in the CEE region with over 16,500 employees in 8 countries and revenues of EUR 4.8 billion in 2009.

A1 TELEKOM

Automated distribution of centrally received mail and fax, using intelligent classification

The Requirements

In order to meet the demands of an increasingly competitive marketplace A1 Telekom began an operational restructuring to expand its service offerings. These included centralizing its processing throughout Austria and higher automation of incoming mail. However, the transactions relating to services such as installing new telephone lines, changing of telephone numbers, issuing invoices, or changes in tariffs, typically involve customer interaction, paper documents and signed contracts.

In changing markets such as the telecommunication sector, a proactive marketing strategy is essential. To be effective marketing campaigns require high volumes of returned forms to be processed rapidly.

In case of A1 Telekom, every day the contents of more than 10,000 letter and fax documents needed to be distributed fast and reliably to the appropriate departments within the organization for ongoing processing. This demanded a highly integrated solution capable of high levels of automation, accurate distribution of documents, and the rapid introduction of new document types.

The Concept

A1 Telekom's scan center in Vienna was chosen as the centralized distribution point for all incoming mail. The entire process involving customer correspondence required re-structuring,

from the digitalization of incoming data (e.g. customer mail and business documents) through to long-term archive of information with fast and transparent data access available, on demand, at the desktop.

Within the project TOM (Telekom Office Management) ISIS Papyrus offered a solution that created a transparent portal between the incoming paper documents and the digital information resident within the system's domain. The implementation of Papyrus Capture also provides the basis for the introduction of further workflow at A1 Telekom.

The Solution

The implementation of this concept was realized by ISIS Papyrus using Papyrus Capture with Papyrus FreeForm® technology. Two high volume scanners process up to 10,000 documents daily with the document sorting and information extraction being performed by Papyrus Capture. Unstructured mail and documents are classified by the FreeForm® subsystem of Papyrus Capture and the index information is automatically extracted.

At commencement of the project, the system was trained to classify the incoming documents into 30 different document categories. However, the number of document types has multiplied through subsequent additions by A1 Telekom's trained personnel.

The Production Process

The scanners generate images of the paper documents (TIFF files), which form the basis for digitalization. Both single- and multi-page documents are being handled as one business object.

The TIFF files are then imported into the Papyrus Capture database for classification into document type. Initially, an automated prime sort is performed based on image analysis and reading identified text. Those documents that cannot be identified within the prime sorting are forwarded for further classification via FreeForm®, with its capability to classify document types from less structured documents.

Following document classification the index data is extracted from the content of each document. Typically, this index information comprises: customer number, area code, postal code (zip code) and telephone number. The extracted data is validated to ensure its integrity using data matching (using 'Fuzzy logic') against the customer database and compliance to the business rules. If the customer number does not correlate with a given telephone number or if a data field is incomplete, the system either corrects the discrepancies or forwards the document for data editing at an operator workstation. Operator workstations enjoy highly intuitive user interfaces that focus on the information under consideration.

The resulting information is exported in a background task, in XML format, to the long-term OpenText archive system together with the application server. Designated personnel within A1 Telekom may retrieve the information and/or documents from the archive using the customer relationship management (CRM) System Clarify.

Furthermore, the extracted contents of each document are exported as an individual business case, in text file format to Telekom's host system for further processing.

Highlights

- ☎ Accepts all document types
- ☎ Powerful design tools that simplify the definition of new document types and extensive use of supervised "machine learn by example" techniques
- ☎ Rapid migration with minimal disruption to the operation
- ☎ From the initial 30 forms the system has expanded significantly and is currently handling more than 100 document types.
- ☎ Mail is typically distributed to the designated personnel throughout Austria within 4 hours upon receipt.
- ☎ Approximately 30% of the mail received daily requires full content extraction using automated recognition assistance. Of those requiring full content capture 80% need no additional processing.

Decision Criteria

- ☎ Capable of processing large daily volumes with high accuracy
- ☎ Intuitive and productive user interfaces for the completion process (Verification Module)
- ☎ Improved performance benefits (number of documents per employee hour)
- ☎ Flexible and comprehensive design environment to readily adapt the system for new tasks
- ☎ Workflow integration



"Having learned to use the new tool and successfully integrated the capture system into our existing systems we obtained a high level of transparency, which not only achieved new processing targets but also improved our customer's perception and, hence, improved acceptance of our products."

Klaus Ambros, A1 Telekom AG





About Bank Austria:

Bank Austria, a member of UniCredit Group, one of Europe's leading banking groups, is the number one in the Austrian banking sector.

As a modern and dynamic universal bank Bank Austria provides its customers access to international financial markets. Within the UniCredit Group, Bank Austria is responsible for the growth region of Central and Eastern Europe (CEE). The Group is the clear Number One in this region.

Bank Austria

Data Capture at the Highest Level

Initial Situation/Objectives

The requirements for the new system which has to work for a just-merged very large organization were:

- Fast processing on the day of entry, with guarantee of highest recognition and validation
- Rich functionalities, such as complete data capture and verification according to the "four-eyes-principle"
- Flexible, temporary access for various employees via Web application providing possibilities for verification, data completion and administration from any workstation
- Integration into the existing IT and scanner environment

The centralized processing office of Bank Austria in Vienna has to handle an average of 200,000 incoming documents per day, in peak seasons even up to 400,000. Incoming documents consist of records submitted by customers in paper form or transfer orders for Bank Austria accounts that have been electronically submitted from other banks. The data of both document sources should be handled by one document capture system. The standardized A6 and A4 forms for national and international payment transactions can consist of print or hand writing.

The Solution

Papyrus Capture ZV, ISIS Papyrus' flexible high-performance capture platform, is a special product for the requirements of payment transactions. Its workflow can easily be adapted according to the differing needs of each banking establishment. The flexibility of **Papyrus Capture ZV** and its options for bank-specific balancing of account numbers and validating customer addresses were key decision factors for selecting the ISIS Papyrus solution.

Papyrus Capture enabled the implementation of all requirements efficiently and successfully:

Database matching of customer data and account wording check using Fuzzy Matching technology guarantees less post editing effort and more accurate data capture.

The amounts read by OCR/ICR can be checked either by a visual comparison or by entering the amounts manually. The definition of any control parameter for release is possible.

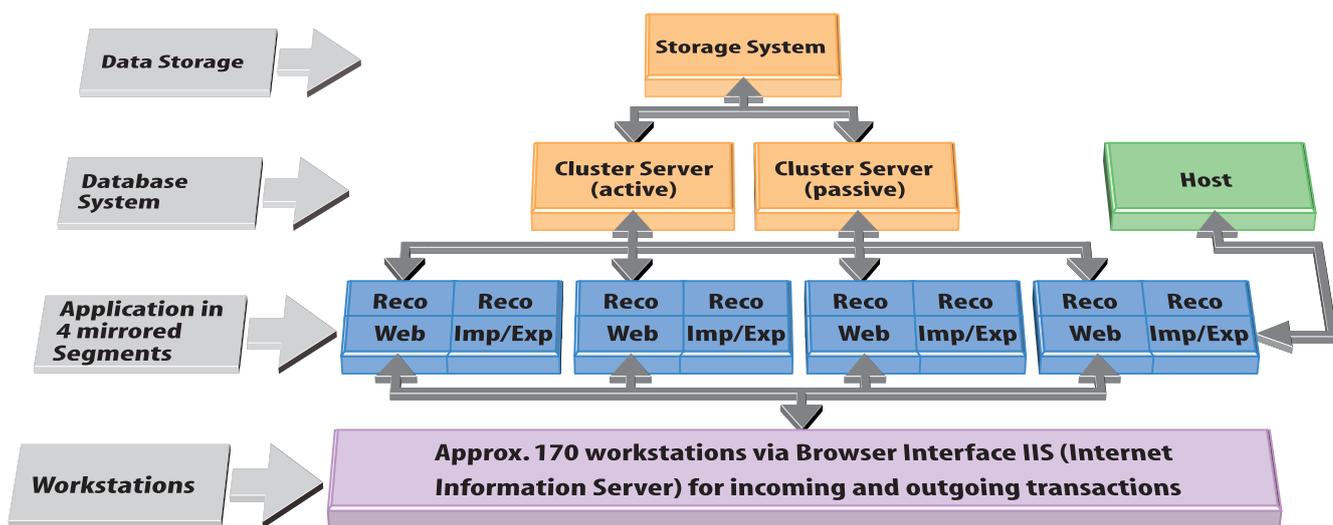
Local verification and validation with **Papyrus Portal** enables data completion via a Web browser environment. Data security is enabled by de-personalization of records by "field-scrambling" (only single fields are displayed, no conclusion on the complete whole document information is possible). Additionally the connection to the central server is protected through a Secure Socket Layer (SSL).





The Process

Two Kleindienst H-Series and one Kleindienst SC 1660 are used for scanning. The scanning process generates Multi-Tiff images (grey level image, dropout (net) image, front and rear side). On single payment transaction forms the account number, bank identification code, addressee, sender and the amount are registered. On records based on a cash transaction, addressee and amount are captured. The number of different document types is unlimited and can be expanded at any time. Completion of data is done either in a field-by-field way or on document level. Before the export, the data has to undergo a double verification control.



Highlights

A special highlight of this installation is the new method of data correction via web browser. The intranet-based correction with a thin-client allows a flexible number of work places and entering the corrections from any network PC with a web browser. If necessary, colleagues from other departments can collaborate after having been authorized as users by the system administrator and thus help at daily or monthly peaks without hiring additional employees or delays. This new technology dramatically simplifies maintenance and roll out efforts as well as costs.



KEBA, with headquarters in Linz, Austria, is a major world-wide provider in the fields of industry, bank and service automation.

ISIS Papyrus provides the intelligent underlying recognition technologies that empower various KEBA solutions.



KeWin mini Lottoterminal

Source: KEBA AG

KEBA

Three Domains

One Cooperation



Rondo 4cashcycle+

Source: KEBA AG

The technical abilities of KEBA in the fields of control engineering, communication technologies and production engineering are internationally widely recognized. KEBA develops both products and solutions to meet the specific needs of their customers and employs only proven advanced technologies to maintain a competitive advantage. Strong emphasis is placed upon the development methodologies as well as compliance to regulatory international standards.

RONDO

RONDO, a product suite of KEBA, covers all main domains of self-service banking.

The Rondo self-service program has a modular structure. It offers customized solutions which are optimized to each bank's requirements. ISIS Papyrus recognition technology is implemented within the Rondo program to automate services which are processed more efficiently and at lower costs in self service than at the cash desk, e.g. scanning of payment transaction slips.

Rondo self-serve transaction terminals

Currently there are about 6,000 Rondo self-serve terminals in operation. Each unit comprises a high level of functionality and has the capability to process many types of transactions obtaining highest recognition accuracy. The modular approach protects investment through add-on functionality to meet future demands, following the strategy to upgrade rather than replace equipment and optimize economy of space.

Using a robust design based on proven, advanced technologies and high-tech components, the terminals are easy to use and employ a touch-screen user interface.

The ISIS "ÜBox"

As a natural continuation of the Papyrus back-office payment processing systems ISIS Papyrus developed and patented the self-service scan-entry system called ÜBox. The ÜBox enables each customer to directly scan bank documents thereby reducing the "point-of-entry" process to an absolute minimum.

KeWin

KEWIN supplies a wide range of terminals from the entry-level models through to the fast multimedia lottery terminals. The modular approach of KEBA consoles makes them suitable for a wide range of applications including: interactive ticket validation, lottery ticket scan stations, etc. To handle the diversity in quality of the lottery ticket entries, e.g. faded or incomplete marks, Papyrus Capture was selected as the underlying recognition technology.

Customers of KEBA include:

Österreichische Lotterien GmbH
Österreichische Raiffeisenbanken
Spanish Lottery STL
Sparkassen IT-Center IZB, Germany
Dubai Police
Telecom Asia, Thailand

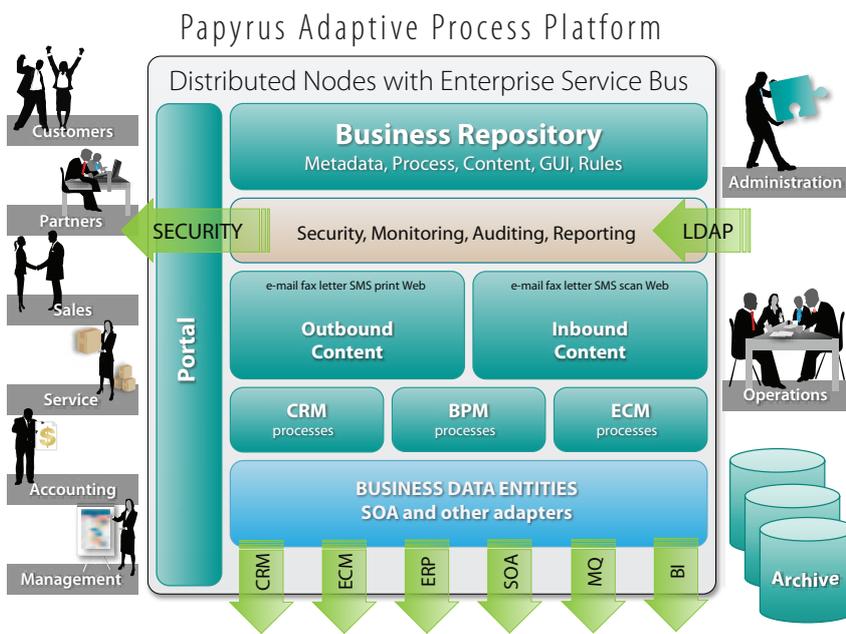
Highlights of ISIS Technology at KEBA

- ⊙ Robust and accurate - **OMR** (mark reading)
- ⊙ **OCR/ICR** Character Recognition of both machine-print and hand-print
- ⊙ **Intelligent Image Pre-processing** to ensure optimal presentation to the recognition sub-system
- ⊙ **Distributed direct document scanning**

KEBA Quick Facts

Location: Linz, Austria
Industry: Development and manufacturing of industry, bank and service automation equipment
Employees: 560+
Revenue: € 70 million+

A comprehensive, flexible and scalable solution for consolidated management of inbound and outbound customer communications across channels, departments and systems.



A selection from over 2000 ISIS Papyrus References:

Finance Sector uses Papyrus

Citibank, Deutsche Bank, HFC Bank, UBS, Credit Suisse, BNP, Capital One, Lloyds TSB

Insurance uses Papyrus

Allianz, Generali, Thriver, RAS, Great West Life, Sun Life, HBOS, Zürich, Hibernian

Healthcare uses Papyrus

AXA, HUK, Empire Health Choice, Siemens Medical Systems, Sanitas, Hallesche

Telecommunication uses Papyrus

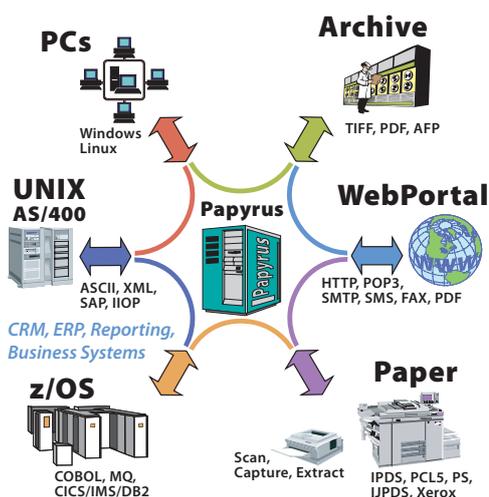
Bell South, SwissCom, T-Mobile, Debitel, Orange, Singapore Telecom, Belgacom

Public Sector uses Papyrus

EDS Department of Social Services, EDS Jobseeker, European Patent Office

Manufacturing uses Papyrus

Avon Cosmetics, Bally Shoes, BASF, Canon, IKEA, Miele & Cie, Renault, Volkswagen



Papyrus Document Frameworks

- Adaptive Case Management
- Automated Document Factory
- Enterprise Application Integration
- Enterprise Output Management
- Enterprise Content Management
- Business Process Management
- Portal and Web Applications
- Change Management
- Business Correspondence
- Campaign Management
- Print Management
- Capture/Classify/Extract
- E-mail, Fax

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