TECHNOLOGY

INNOVATION

<INBOUND>

Inbound Mail Processing

ISIS Papyrus enables your mail to flow

INSIDE

The Papyrus Blueprint - One Platform for:

- **Intelligent classification** and automated distribution
- **Efficient data enrichment** of all documents
- Processing all incoming **communication channels**
- A complete solution for agile **Case Management**

Case Study

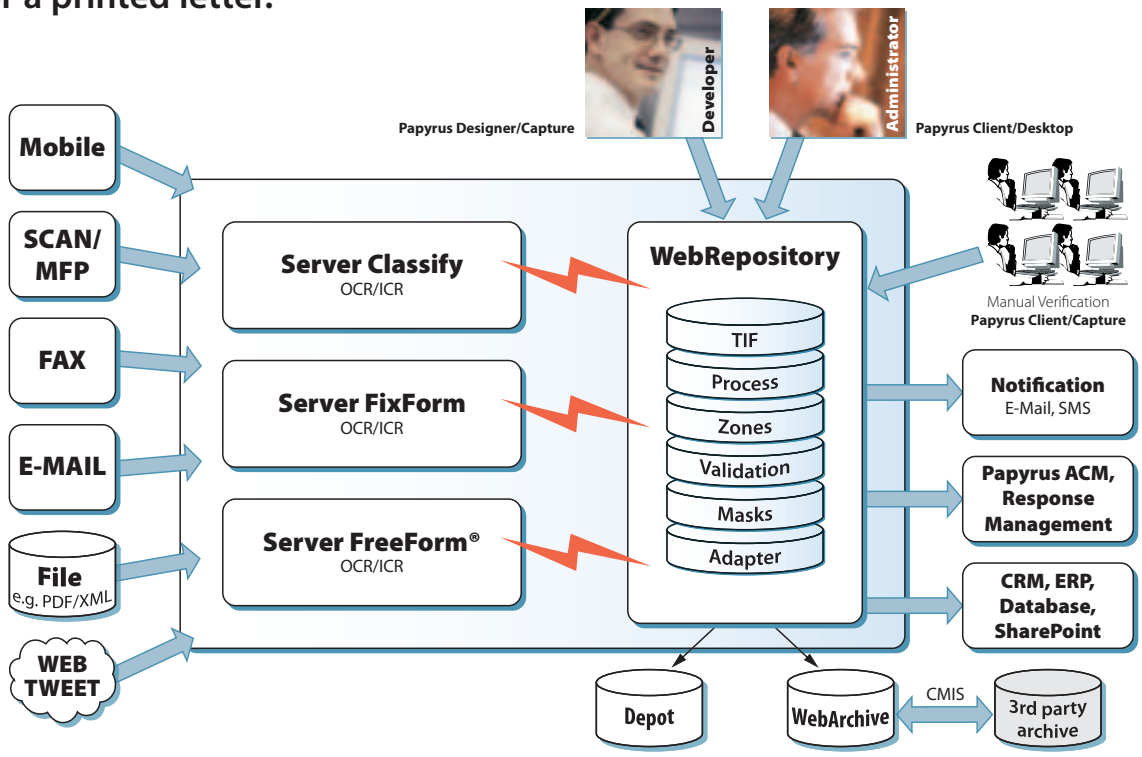
- **Sanitas, City of Vienna, GIS, A1 Telekom**

KEY ADVANTAGES

- **Reduced throughput time**
- **Less acquisition effort**
- **Information available earlier**
- **Channel independence**
- **Common view of customer**
- **Integration with SharePoint**
- **CMIS Adapter for FileNet, EMC, Alfresco, etc.**

One Company – Many Inbound Channels

Customer Communication and Business Documents arrive in multiple ways in an enterprise. For organizations that want to operate with fewer systems, it makes sense to standardize on a common platform for acquisition across all inbound channels with the same intelligent "document understanding", whether a client's message arrives as a Tweet or a printed letter.



Loosely coupled integration with back-end systems

A broad variety of Papyrus Adapters (file, XML, SOAP, MQSeries, HTTPs) and the TypeManager DB (Oracle, MS SQL, DB2) connect the document capture system with vital business application data from almost any major legacy or mainstream system or application. These platform- and compiler-independent interfaces drastically reduce the amount of time and effort required for interfacing especially for validation purposes. Full support of CMIS allows connecting with SharePoint and all leading document archives like FileNet and Documentum without additional programming.

One set of definitions and resources

There are enormous benefits in using common document definitions and standardized corporate datafield structures and rules on one proven recognition engine (Papyrus Designer Package/Capture) for both high-volume batch processing and single document ad-hoc scanning (for client/server, desktop or Web portal).

Papyrus avoids dependencies on hardware, operating system, programming languages, transformation languages, data input formats, scanners, printers or electronic input channels.

Key Features of the Papyrus Platform:

- Central resource collection and management
- Versioning of all objects including data
- Variant control for branding and languages
- Central user management by role and policy
- Change management and automated deployment by date and time
- Centrally managed GUI (Papyrus EYE/Widgets)
- Workflow and process management (4-eyes principle)

Receive Mail & Capture Workflow

Customer case documents via

■ Mail ■ Fax ■ E-mail ■ Web ■ SOAP

Studies have found that up to 75% of all documents received and manually keyed into a data collection system contain some type of error. However, the ISIS Papyrus Capture solution automates document processing with speed and accuracy, regardless of the input method. Papyrus Capture can meet all of your corporate inbound document requirements without the need for complex programming.

■ Incoming mail/scanning

Case documents are often received as paper documents which Papyrus Capture then transforms into business-critical information by scanning, digitally signing and encrypting the data.

Visual quality control, batch image optimization and automated indexing technologies such as barcode and/or OCR with zonal recognition are all part of the Papyrus solution.

■ Incoming faxes

Papyrus Fax Server set-ups in remote offices enable fax documents to be received and indexed directly at the source and then shared as appropriate throughout the organization based upon roles and privileges.

■ Incoming e-mails

For e-mails, neural network functionality is used to compare similarities and differences with incoming e-mails and those stored in the domain knowledge base that's built up by examples. Words and phrases in the body text are also used to classify an e-mail, not just those in the subject line.

■ Web response

Papyrus software also allows for a Web application for customers to fill out HTML response forms. These are captured with the Papyrus HTTPs Adapter and processed accordingly.

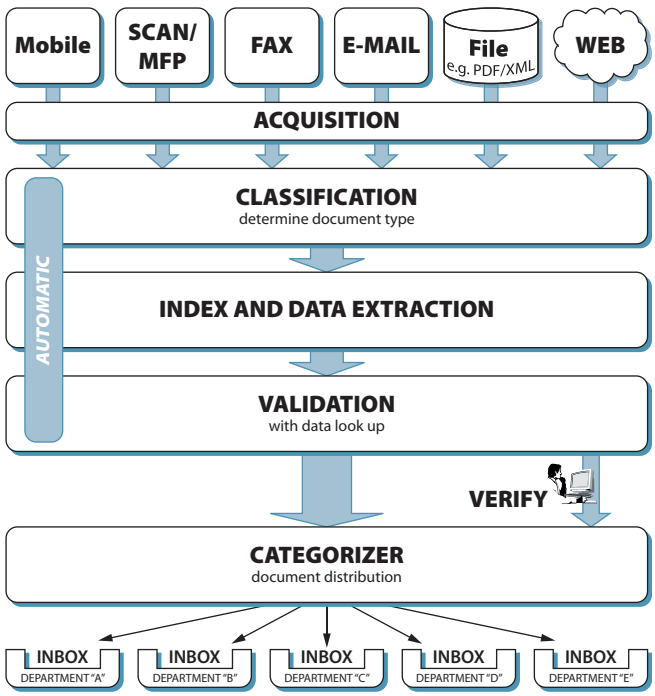
■ SOAP application message

A SOAP message can be used to communicate information from a 3rd-party application server, JAVA application, Web portal or any other Web services-enabled system.

Multifunction printer **Smartphone/tablet**

Gains achieved

- Transparency of collecting documents electronically, whether via document scanner, MFP (multifunction printer), cheque or network scanner
- Uniform operation with TWAIN driver, PixTools/ISIS and Papyrus low-level driver
- Extra features like imprinting, dual stream images and soft dropout color



Incoming Mail workflow

Automation by Recognition: Extract/Index & Categorize

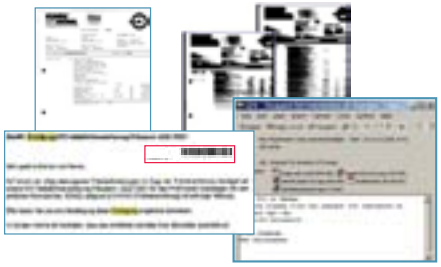
Recognition of all inbound communication

With the variety of documents arriving daily, the need to quickly process and forward them to the right department is paramount. Therefore, the development and operation of a capture system must be independent of document types, input hardware and operating system. But to achieve this result, large banks, insurance companies, government organizations and industry and service corporations all require fast customization, elimination of programming effort and operating system and scanner independence - all inherent in the Papyrus Inbound concept.

Self-learning classification process

The Papyrus Capture classification methodology is independent of document type because the categorizer is typically trained through the use of examples. From this input the classification process learns specific similarities and distinctive differences. Self-learning technology ensures that all types of documents can be classified based on properties, keywords and rules, including:

- Layout
  - Logo
- Keyword
  - Text
  - Barcode
- Statistical text

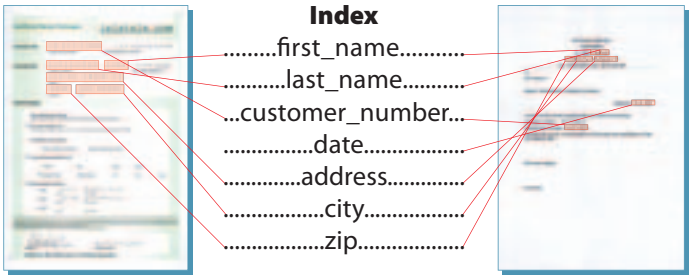


For documents that cannot be classified correctly, constant fine-tuning is possible while Papyrus Capture runs in real time. This ensures continuous optimization of Papyrus Classify and enables flexible adjustment of the rules based on changes in the received documents that have to be processed.

Intelligent extraction process

Based on advanced OCR/ICR - a combination of ISIS' own development and a market leader engine - printed and handwritten documents can be analyzed and data fields of interest automatically extracted regardless of whether or not the position on the page is known. Immediate fuzzy logic-based matching uses calculations to assess the probability of the contents of a predefined data field for dramatically improved results.

Papyrus FixForm uses four OCR/ICR engines with advanced image preprocessing for improved document recognition. It provides indexing and processing of data extracted from known forms on predefined document positions. Manifold parameterization and post-processing text filter functions enable best possible recognition automation.

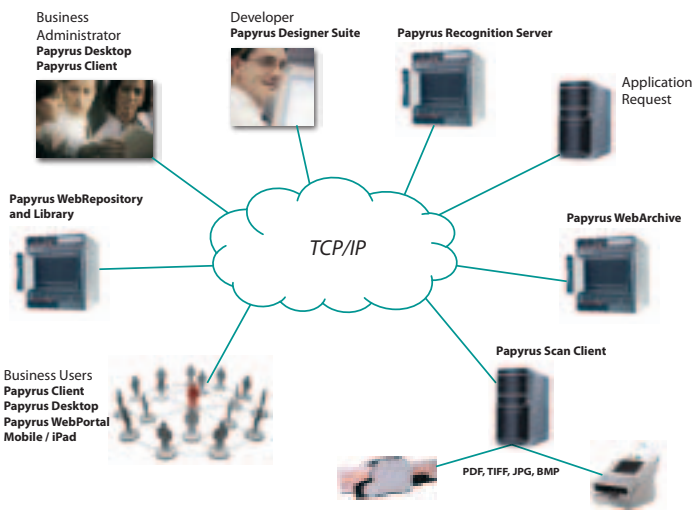


Papyrus FreeForm® automatically recognizes scanned but unsorted business documents of unknown structure and layout. The system also analyzes unstructured or poorly structured documents with great reliability and is capable of processing any kind of business case document, such as correspondence, invoices, copied forms, job applications and many more.

Powerful peer-to-peer capabilities for enhanced productivity

With Papyrus, capture applications have the potential to be fully scalable to tens of thousands of documents with hundreds of users on computers or mobile devices sharing incoming information, data or documents. The implemented security model in Papyrus prevents misuse of such a powerful open system. Deployment based on change management to all users and devices is fully automated by the Papyrus System and occurs as needed.

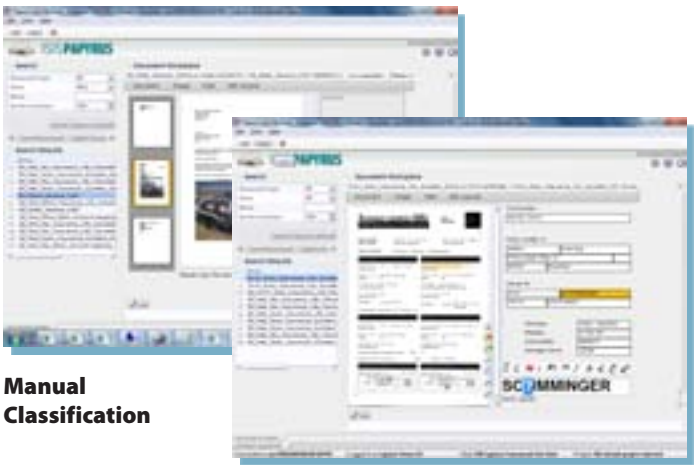
Full Scalability - Fault Tolerance - Operating System Independence



Optimize with Validate & Verify

Exception handling

In the uncommon event that automatic classification is unsuccessful, the document is routed for manual classification and displayed automatically for visual categorization. Self-learning technology ensures that all types of documents can be classified correctly.



Manual Classification

Verify: Manual Data Completion

Data entry staff given "Correction and Verification" duties deal only with rejected character reads or those failing the plausibility checks. Ensuring maximum data integrity, the validation data and contextual information used for plausibility checks are retained within SQL.

When a document cannot be corrected or verified immediately, and a specialist or customer care representative needs to respond, then the document is placed into a suspended state and forwarded to an exception item workstation or to a manual process for ongoing handling.

Papyrus Client/Capture is the browser-based or fat client end-user interface for all interactions for the completion, correction and classification of inbound documents - along with full GUI functionality for displaying documents and manual validation. Other features include:

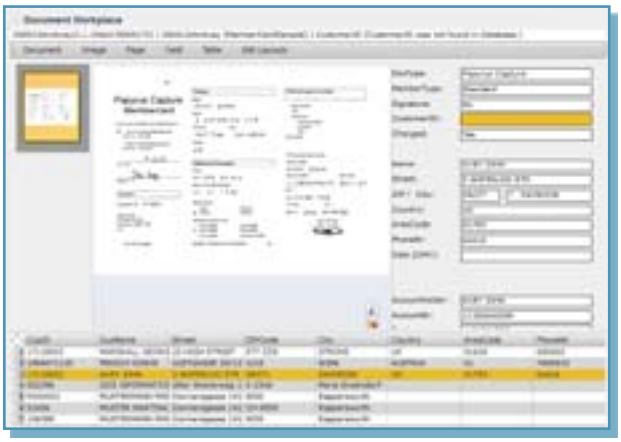
- Uniform handling of scans, faxes and e-mails
- Context-aware, editable fields for data entry
- Interactive verification of recognized data
- Image display of snippets or whole pages
- Freely defined message text and user hints
- Customized "Document Workplace" for extended manual input processing such as sequence or exchange of pages

Benefits

- Four ways to access - ONE definition
- Seamless display of all processed inbound document types
- Ergonomic, flexible screen designs – Papyrus EYE/Widget
- Customizable without programming

Highlights

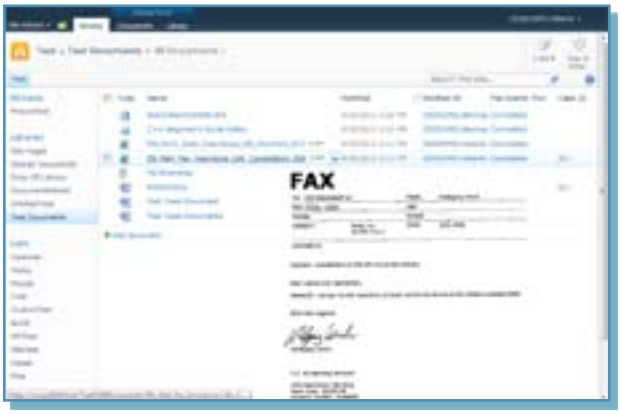
- Modern look but operating system-independent
- Same definition for Web, mobile and desktop
- Extremely flexible and user definable
- GUI definition without programming:
  - NO extra GUI designer tools required
  - NO HTML knowledge required
  - NO process code in the layout
  - NO XML/XSL/XSLT description required
- Clear distinction between layout and content
- Viewing of TIFF, multipage TIFF, AFP, JPG and PDF
- Freely customizable arrangement of document list, data and images
- Highlighting of rejected/suspicious characters
- Tree & thumbnail lists of documents to allow quick overview
- Online validation with selection list for values allowed



Database Lookup Support for Completion

Papyrus SharePoint Adapter

Papyrus offers several options to integrate inbound automation into established Web content and document management systems like SharePoint, FileNet, EMC or Alfresco - all connected via the OASIS CMIS standard.



Papyrus integration with MS SharePoint

Comprehensive Capture ...

... incoming e-mails

E-mails are commonly used by customers and accepted as documents of relevance - the content must be processed quickly and reliably, to provide the prompt answer or reaction that clients typically expect. This is possible only with the help of automation tools and recognition support functionalities to:

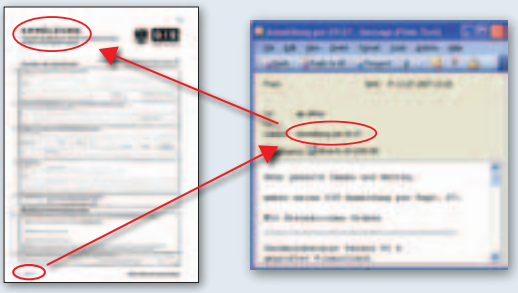
- classify the type of e-mail arriving
- precisely extract relevant indexes and information
- recognize data independent of both the format of delivery and file attachments as well as the unstructured text composition

Papyrus Adapter/E-mail offers all degrees of connectivity and integration for POP3 (and SMTP) up to MAPI (for Exchange) and IMAP (for Lotus).

GIS Gebuehren Info Service (Austria Broadcast ORF)

For all Austrian broadcasting reception equipment (TV or radio), Gebühren Info Services GmbH (GIS) manages all customer advice and communication. GIS has used Papyrus Capture technology to process thousands of incoming paper forms a day, scanning with Kodak Scanners controlled by Papyrus Scan Client and extracting all necessary data by recognizing printed and even handwritten characters for data such as new address or bank account number information.

Because GIS customers use e-mail more frequently, handling the increasing number of e-mails to a general address such as info@gis.at has caused more manual routing and a significant misdirection rate.



Based on Papyrus Objects consolidated Capture functionality, a powerful automation solution was implemented to totally integrate with the existing Microsoft Exchange Mail system. An intelligent workflow grips incoming e-mails and faxes via the Papyrus MAPI Adapter.

The core Capture function - the classification step to determine document type - has a variety of cascadable methods used by GIS' Business Administrators, which are applied both in attachments and in the body (text) of the e-mails.

... incoming faxes

Although the importance of faxes has declined, hundreds of thousands of documents are still faxed every day:

- from a Telco's agent's shop with contract initializations
- from the growing number of home-based MFPs
- wherever the consumer's signature is essential and distributed infrastructure is not yet equipped with scanners

Faxes can be directly received by Papyrus Fax Adapter/Receiver or imported in the standard CCITT format. They often arrive as a piled sequence of pages which needs to be grouped to various single documents as well as "cleaned up" due to lower image quality typical from skew, dirt noise and diminution. This requires that the fax receiving application offers:

- advanced image preprocessing to improve document quality
- easy-to-use "document workplace" functionality to rearrange pages, split documents and categorize quickly

A1 Telekom Austria

A1 Telekom Austria is Austria's leading provider of telecommunication services, encompassing 5 million mobile customers and 2.3 million fixed access lines. It is part of Telekom Austria Group – a leading Telekom provider in the CEE region with more than 16,500 employees in 8 countries and revenues of approx EUR 5 billion.

The content of more than 10,000 letter and fax documents daily, including returns of marketing campaigns and often coming in from a variety of shops and agents, needed to be distributed quickly and reliably to the appropriate departments within the organization for ongoing processing. This demanded a well integrated solution capable of high levels of automation, accurate distribution of documents, and the rapid introduction of new document types.

The Fax Document Workplace, based on Papyrus Client/Capture, was designed after the customer's special requirements to include not only standard classification functionalities, but also resorting pages (manually or automated by the Papyrus Capture Document Factory), and storing mis-sorted pages temporarily in an "image pool".

... for a Multichannel World

... mobile scans

Smartphones and tablets are flooding our everyday lives – and we may use the integrated camera not only for leisure snapshots, but also to capture business documents to further process them electronically, such as:

- proof of citizenship when applying for a bank account
- damage report for insurance claims
- meter or payment form for reports and transactions

The innovative Papyrus EYE/Widget technology enables mobile integration and direct user control similar to desktop scanners:

- special image preprocessing including straightening and brightness adjustment
- intelligent binarization and image volume compression
- ergonomic user interface to control image quality and recognition results online

Raiffeisen Austria: Payment Form Capture Solution

The Raiffeisen Banking Group is the largest banking group in Austria, with 535 independent local cooperative banks and1689 branches - more than 40% of Austrians are Raiffeisen customers. To make life easier, Raiffeisen decided to implement leading-edge technology for an advanced mobile scan application to conveniently capture and process payments via the iPhone.

Task-driven approach (ACM with EYE Widget)

Using Papyrus Capture, Raiffeisen and ISIS Papyrus developed a business application and iPhone app with a unique payment slip scan function that simplifies the correct capture of the complete data in the form.

Users select 'payment scanning' and take a photo of the whole payment slip with the iPhone. After verification and possible correction of the captured data, these items can be processed immediately or later. The subsequent payment transfer is handled either by the Raiffeisen ELBA - mobile or ELBA-Internet banking.

... multiple OMR

OMR zones (Optical Mark Recognition) can be found on many types of documents: customer forms, questionnaires, lottery tickets or government election sheets. Professional OMR extraction tools like Papyrus Capture provides the ability to easily define:

- single and grouped mark fields
- thresholds for empty, reject and filled
- handling of anchors for best adjustment
- rules for allowed and forbidden checkmark combinations

The most important challenge is maximum precision - to recognize a checkmark and the position where it belongs, and not to misinterpret dirt as a tick!

Cantone Ticino / KEBA Automation

The elections of the various Councils of Swiss canton **Ticino** take place every 2 years and involve processing some 150,000 ballots in A3 format, with up to 600 mark positions - in a few hours. In 2007 the innovative Cantone IT department moved from elaborate manual ballot counting to 10 Kodak production scanners and Papyrus Capture Software to successfully collect and analyze these volumes. The result of the distribution of seats was published before the time permitted. Precision was manually checked several times comparing ballot papers and data in the system, to find no errors!

KEBA, based in Linz, Austria, is a world-wide provider in the fields of industry, bank and service automation. The smart terminal "KEWIN" supplies entry-level models through fast multimedia lottery terminals. The modular approach of KEBA consoles makes them suitable for many applications, including interactive ticket validation and lottery ticket scan stations. To handle diversity in the quality of lottery ticket entries, such as faded or incomplete marks, Papyrus Capture was selected as the underlying recognition technology.

Customers of KEBA include:

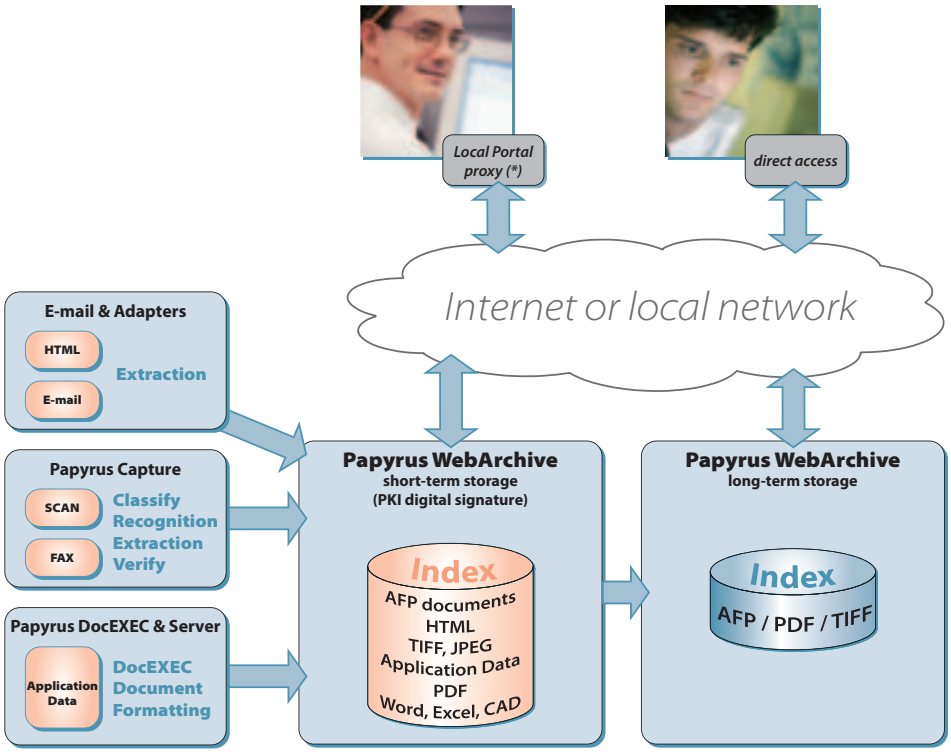
- Österreichische Lotterien GmbH
- Spanish Lottery STL (10.000+ units)
- Russian Lottery

WebArchive - Electronic Originals

Short-term and long-term archiving

Multiple **WebArchive** servers perform the long-term and short-term archiving onto the media of your choice. Storage management attributes for each object ensure that it is automatically archived as soon as it reaches the appropriate state. There are no archive runs or conversions necessary and if the process requires proof of originality and authenticity, the archived items can be digitally signed at any point in the process.

A WebArchive can consist of any number of servers and can use either its own index or an external DB index. BLOBS can be stored natively on disk where they can then be subsequently stored and retrieved from/to a third-party archive, or some external database. Furthermore, Papyrus WebArchive is not dependent on any particular hardware.



E-document delivery and customer care Web access

One or more **WebPortal** servers can be deployed to supply the **Papyrus EYE** user interface or, alternatively, each user can work on their own node using a PC. Dynamically created from definitions in the repository and not through the coding of a GUI, the Papyrus WebPortal can automatically create global modifications of the presentation through changes to the metadata in the repository. Document viewing options are PDF, AFP, GIF, TIF.

Full integration with Output Management

All documents can be reprinted, faxed or e-mailed. 'Copy' or 'duplicate' information is automatically added by the system at the time of print.

Authorization, Security and Auditing

- Access rights by user and role
- LDAP Adapter
- Audit trail
- Document SSL encryption (AFP and PDF)
- Digital signature (PKI Public Key Infrastructure)
- Secure HTTPS Adapter

Papyrus WebRepository integration

- Manage versions and resources (fonts, logos, etc.)
- Make resources available on various platforms
- Manage application definitions and their versions
- Distributed database (archive nodes)
- Multiple point of access (several portals)

WebArchive Features

- View meta information on the page (stickers)
- Full integration with production workflow and case management
- Central archive folders for ALL document types and e-mails
- Third-party vendor database not required, but supported
- Cross-platform distributed storage
- Long-term archive with external storage systems (i.e. Tivoli or Centera)
- Unlimited storage space provided by distributed archive nodes, overcoming hardware limitations
  - Unlimited archive size
  - Unlimited amount of nodes (> 4 Billion!)
  - Unlimited amount of objects (> 4 Billion per node)
  - Unlimited disk space

Papyrus for Content and Case Consolidation

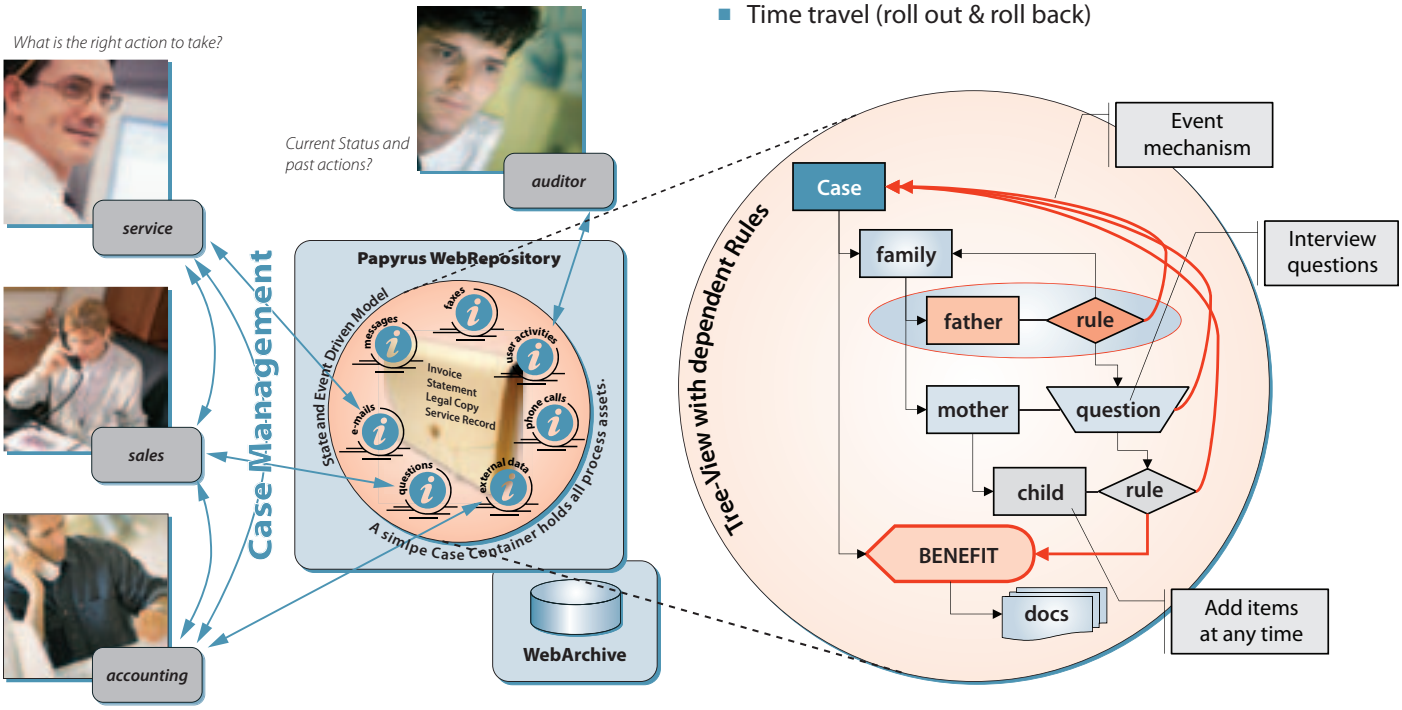
Case Management is about receiving information, getting the right information to the right people and having the right processes in place to enable people to act at the right time in order to respond appropriately. This requires a business communication platform that offers closed-loop Case Management for the consolidation of inbound and outbound business communications on a single flexible platform.

The business process created through simple assembly of user-definable items in a case folder enables a holistic view of a case while also providing built-in support for the process time line.

The **Papyrus Process and Content Platform** integrates Case Management with ECM, BPM, databases, time travel (past and future) and a rule engine for case definitions. The central WebRepository in the system defines, controls and version manages the metadata for all business cases containing data, documents, questions, rules and previous activities. Relieving the business from traditional programming in languages such as Java and .NET, the benefits are substantial because agile processes make for a business that is much more in control.

- Any item combination
- State changes
- Case summary states
- Consolidates all documents
- Documents created from case data
- Time travel (roll out & roll back)

Papyrus - State- and event-driven model



A flexible solution

- A free-form case container holds all case items and their state providing flexibility and control at the same time.
- Changing an existing case means only adding another item to the case on the fly.
- Ideally, the summary state of the case does not have to be encoded into rules but rather can be trained!

Benefits

- All information items are modeled in the Papyrus WebRepository
- Unique closed-loop case management (inbound/processing/outbound)
- Enables a holistic view of a case, family or household
- Built-in support for the process timeline
- The case contains data, documents, rules, questions, decisions and previous activities
- Rules are attached to the correct data element and applied only in the case
- Deploying Java or .NET programs to servers or PCs is not required

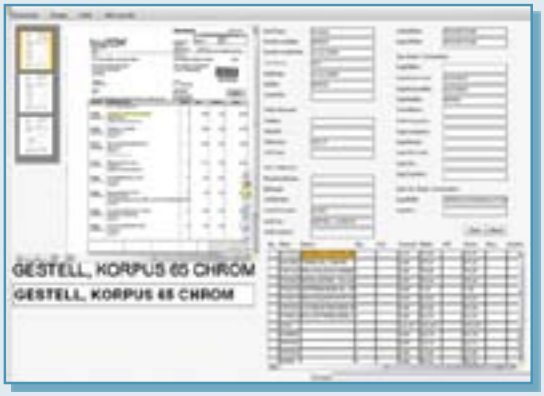
City of Vienna

Magistrat 6 – City of Vienna

As part of activities to centralize Accounts Payable processes and run them more efficiently, the City of Vienna searched for a highly productive document capture system with the option to use it in future not only for invoices, but for all incoming mail. The first phase of the project requirements were:

- 1.5 million invoices with 5 million pages per year, with heavy peak in December and January
- Many tens of thousands of suppliers
- Identification of one among many receiving departments (mixed terminology)
- Integration with SAP both for validation (e.g. open orders) and export (iDOC)
- Storage of all invoices in municipal's PAM-Archive

After a profound selection process the City of Vienna selected the ISIS Papyrus Capture application. Based on detailed requirement specifications the standard Capture Framework was adapted, and the solution went to production in 2010. Since then more and more departments of the municipal have switched to this cost-saving inbound processing operation.



Papyrus Capture Verification User Interface

Capturing City Business

Papyrus FreeForm®

Papyrus FreeForm® technology extracts the key data of each invoice, or - using adaptive document understanding functions and precise recognition - automatically captures every single service item position, plus additional service-related information.

Functionalities

For extraction of datafields on invoice types the system has never seen before, logical definition libraries are initially available from ISIS Papyrus (definition set for invoices), comprising the necessary parameters (pattern, anchor words, conditions). Additionally, the expressions and descriptors required for vendor-specific definitions can be 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 in a master database. This normalization of notational variance and uncertainties created within the text recognition is achieved using "fuzzy-logic" matching technology.

sanitas

Extracting Every Detail

Production Process

Image and data capture

Incoming invoices can be scanned in both sorted and unsorted batches using high-performance document scanners like Kodak, Fujitsu or Microform. Images of the documents are transferred automatically within the system for classification into document type (invoice, credit note) and extraction of their contents of interest.

A sophisticated validation process, which can be defined both with Papyrus NLR (natural language rules) – e.g. "if total amount more than EUR 10,000, four-eyes verification is mandatory" – or by Papyrus technical scripting language PQL, has the important duty to control the quality of the results.

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 details provided by Papyrus Capture with FreeForm® allow for consistent and objective revision of the positions on the submitted documents. Totally integrated into the powerful Papyrus Architecture, knowledge workers can use all aspects of Adaptive Case Management to trigger the best possible processing, supported by stickers, ad-hoc-targets, etc.

Sanitas Health Insurance

The Requirements

Insurance company Sanitas is dealing with peaks of up to 30,000 invoices daily from physicians and laboratories. The requirement was to extract relevant invoice information from the insurance customers' reimbursement claims, including insured person and dates of treatment. Clearly, a powerful capture tool was required to provide responsive service to customers. However, besides introduction of standard TARMED format, many different invoice formats from suppliers made the content search a significant challenge that could not be met by a conventional "bottom-up, template-driven" approach.

The Solution - Papyrus FreeForm® for Invoices

From previous experience, Sanitas selected the solution 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 FreeForm® technology accurately extracted the key data of each invoice, such as insured person, date of treatment and amounts involved.

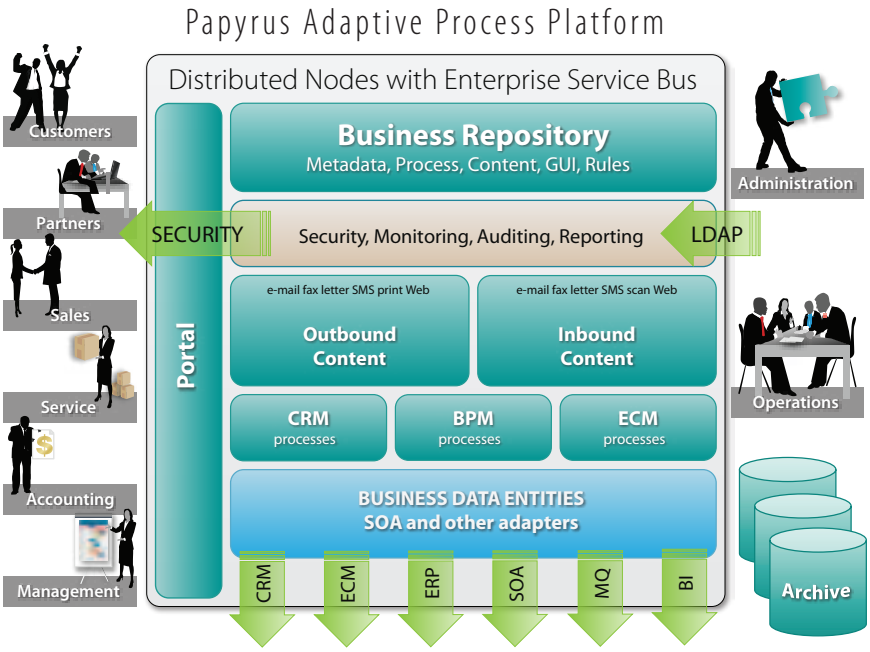
The Papyrus Capture solution generated savings immediately, and the costs of the document capture system were recovered within only a few months, especially due to easy revision of positions.

Complex Sample Document: landscape, 2 columns with 2 column styles

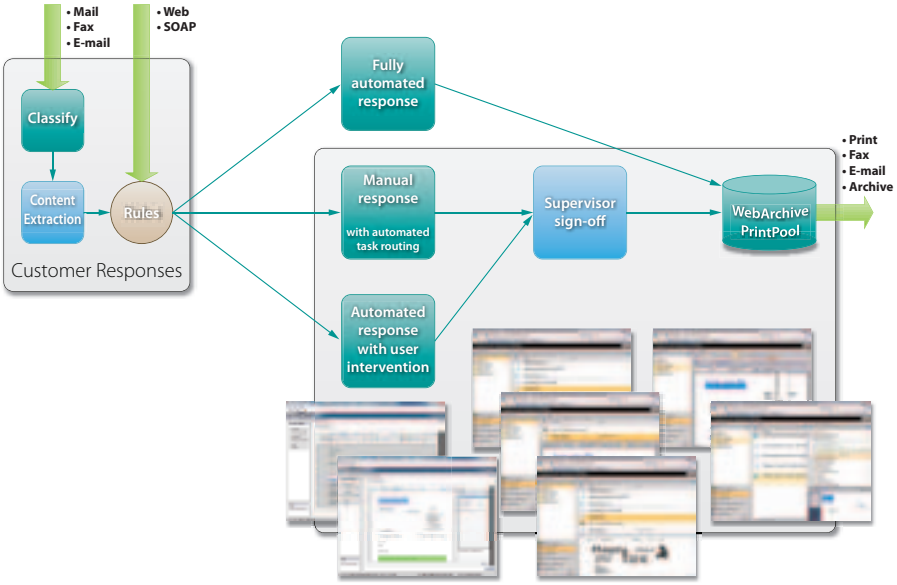
The Sanitas Group consists of five stock corporations, offering basic insurance services through the corporations 'Sanitas', 'Wincare' and 'Compact' and additional complementary insurance services through 'Sanitas' and 'Wincare'. Insuring more than 800,000 people for a policy volume of more than CHF2.3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

A comprehensive, flexible and scalable solution

for consolidated management of inbound and outbound customer communications across channels, departments and systems.



Organizations can **define, measure, and manage** process, content and data in complex service environments with a shared customer view and customized GUIs.



The **Papyrus Platform for Business Communication and Process** is much more than a collection of software components. Its architecture follows a thoughtfully designed blueprint that provides solutions to individual customer problems as well as long-term concepts for the natural integration of new technologies into your environment.

These Papyrus components can be used as standalone products or combined in an integrated system to cover the complete lifecycle of inbound and outbound correspondence including process management.

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