

ISIS Papyrus
Focus Report

Customer Response Management



Responding to customer feedback **timely** and **consistently**...

- ■ ■ to all inbound correspondence
- ■ with minimal manual processing
- ■ ■ and automatic classification of incoming mail
- ■ with extraction of vital information
- ■ ■ and automatic routing to a department or user
- ■ or an automated response by the system

... builds **trust** and guarantees **repeat business**.

The objective is to allow customer care channels to respond timely and consistently for improved customer service.

The need for a centralized solution for all incoming and outgoing communication and a single point of contact has never been more acute. Corporations require a solution that minimizes manual processing by automatic classification and extraction of vital information from incoming mail on paper, fax, e-mail and application messages. Automatic routing to a business department or user takes place based on business rules in order to create an individual response.

Responding to Customer

Feedback

Response Management Requirements

- ★ A browser-based, one-screen search to locate all customer records.
- ★ Customer folders include all communications to and from the customer, each case attached to the customer file.
- ★ Interface directly to all business systems for synchronized customer information and responses.
- ★ Incoming letters, faxes and e-mails are electronically routed to customer care based on predefined business rules.
- ★ Every clerk's action is recorded for analysis.
- ★ Reference letters received are combined with all responses for those letters.
- ★ Capture, extract and classify critical customer data e. g. customer number or certain phrases in the correspondence.
- ★ The document status information is flagged for follow up.
- ★ Audit trail of activity.
- ★ All inbound and outbound customer correspondence is tracked by date and time and service code i.e. complaint no.
- ★ All received correspondence can be queried.
- ★ Response times can be tracked.
- ★ Responses and reports can be distributed by paper, fax or e-mail.
- ★ Language tag in customer data defines language for correspondence.
- ★ All generated documents consistent with corporate standards.

Customer Care Requirements:

- 1 Authorization: Customer folder is accessed based on clerk's role and privilege
- 2 Browser-based access to customer case history, including all communications (letter, e-mail etc.)
- 3 Ability to add notes/remarks to customer cases.
- 4 Real time access to customer data.
- 5 Generate personalized response to customer, or comment with all relevant information, including problem description and resolution for appropriate customer support queue for fulfillment.
- 6 Sign off response by Supervisor.
- 7 Print and mail or e-mail response.
- 8 Notify customers by pager or SMS



Typical deficiencies of a home grown correspondence system:

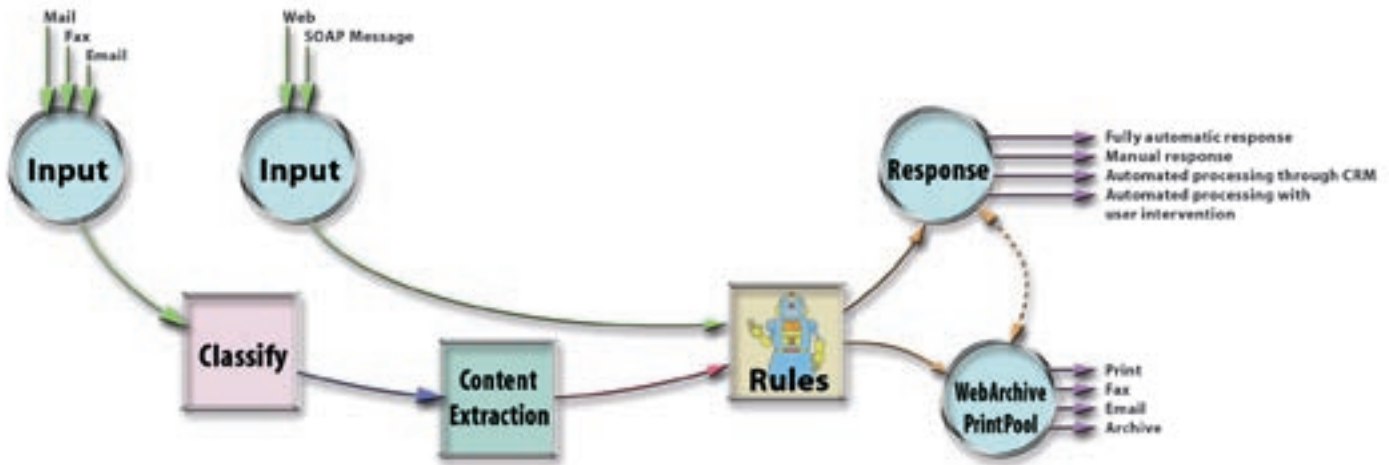
Multiple applications are required to capture the relevant information. Responding to correspondence can therefore require the clerk to access or enter data on various screens across multiple business systems (i.e. SAP, Siebel, Excel). Due to the complex nature of systems, important information is often not entered or is entered incorrectly. Customer care databases are not integrated with customer databases the business uses. There is no flexibility in adding or changing customer contact information.

- Inability to track customer correspondence.
- Original correspondence is filed in file cabinets.
- No 'single view' of the customer.
- Finding a required document, on a paper copy or an electronic copy is a lengthy process.
- Labor intensive data input for tracking and reporting.
- This results in a limited ability to effectively respond to the customer and to efficiently track correspondence due to the system constraints.
- Valuable response time is lost and customer retention opportunities are diminished.

What does *Papyrus Response Management* do?

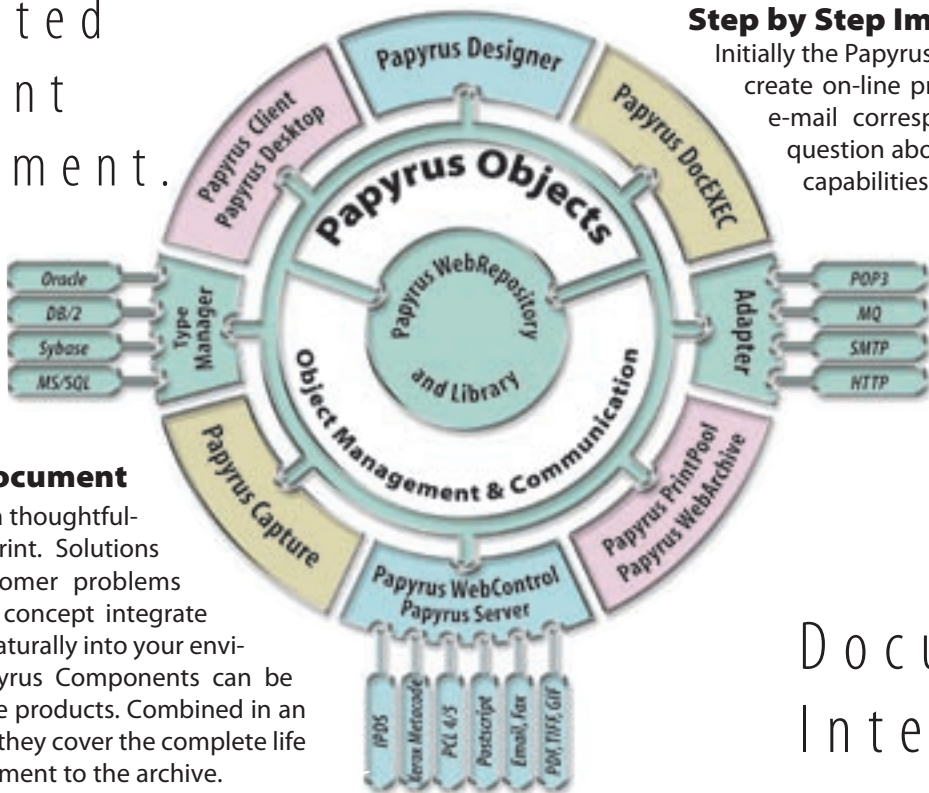
- Responses are received as input documents:
 - ▲ Paper scans, fax, e-mail, Web, SOAP application messages Papyrus classifies and creates logical documents:
 - ▲ Invoice, order, reply, registration, ...
 Papyrus extracts the data content:
 - ▲ Tel no, fax no, customer no, customer name, ...
 Depending on business rules, received responses are routed to the correct process (queue).
 Extracted data is stored in a CRM System, Database...

- Once the data is captured it triggers a workflow that leads to a response. New OUTPUT documents are automatically created.
 - ▲ Reply, notification, request ...
 These physical output documents are formatted and sent.
 - ▲ Printed and mailed, faxed, e-mailed, PDF, Web
 New responses are stored in the archive. Notice is automatically given to a certain business group or person.
 - ▲ Customer care, sales, marketing
 Customer representatives have access to all documents sent and received.



One System Manages Incoming and Outgoing Correspondence.

Integrated Document Management.



Step by Step Implementation:

Initially the Papyrus System might be used to create on-line proposals. If an unsolicited e-mail correspondence arrives with a question about a proposal the capture capabilities can be leveraged. Now those capabilities can be just added onto the platform that is already in production.

The **Papyrus Document System** utilizes a thoughtfully designed blueprint. Solutions to individual customer problems using a long-term concept integrate new applications naturally into your environment. The Papyrus Components can be used as stand-alone products. Combined in an integrated system, they cover the complete life cycle from development to the archive.

Document Integration®

Responses are received by

■ Mail ■ Fax ■ E-mail ■ Web ■ SOAP Message

■ Incoming Mail/Scanning

Responses are received as paper documents. They are scanned and appear in the Papyrus Scan Client for example with thumbnails of all the scanned documents (TIFF Images) and the first one displayed in full.

■ Incoming Faxes

Fax documents are visible in the Input Queue displaying the originating fax number.

■ Incoming E-mails

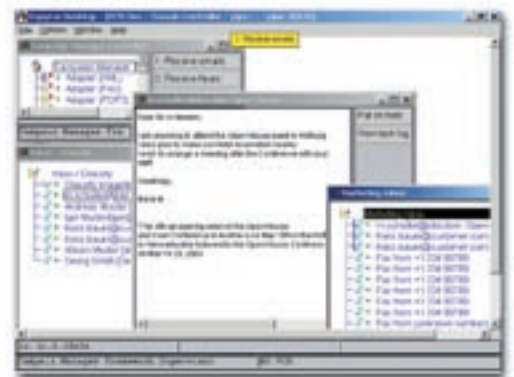
For e-mails, neural networks are used to compare similarities and differences with incoming e-mails and those stored in the domain knowledge - built up by examples. Words and phrases are used to classify an e-mail, and not just those in the subject line.

■ Web Response

You can have a Web application where customers fill out HTML response forms. These are captured with the HTTP Adapter.

■ SOAP Application Message

You can use a SOAP message to send response information from your 3rd party application server, JAVA application, Web Portal or any other Web-Services enabled system. The SOAP message triggers a response task.

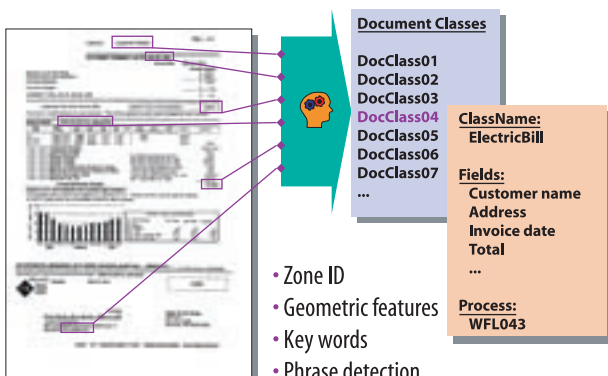


Classification of responses: A physical document, fax or e-mail is received. The classification is independent of document type. The classification is trained by a set of examples.

Exception handling:

If the classification is not successful then the document is routed to the manual classification process. Each unrecognized document will be displayed automatically for visual classification. The document will be flagged and can be routed to a supervisor's inbox for further verification.

Self-learning technology ensures that all types of documents can be classified.



The classification applies the knowledge of rules which were acquired in the training of unknown documents. *Papyrus Classify* uses a number of documents for each document-type for training purposes. From this input the classification process learns the similarities and distinctive differences.

Fine-tuning and retraining the system:

Based on the documents that could not be classified correctly, constant fine-tuning is possible while running in real time mode. This ensures continuous optimization of *Papyrus Classify* and enables flexible adjustment of the rules based on the changes in the documents that are received.

Content Extraction



Once the document is classified as a specific document type, a task is started that extracts the fields of interest from the document, according to the data definition in the template.

Extraction Process

The key data from the image is extracted, and because the data may be incomplete, **Fuzzy Matching** is used to find the correct customer data in the data base. Fuzzy Matching improves the response-data extraction substantially to more than 80% accuracy. A high percentage of responses need no manual intervention, even with poor image quality.

Code	Unit	Rate	Code	Amount
1	ACTL		ACTL	\$4.00
800	KWH-15 @ \$1.061376 Per KWH			\$5.44
37	KWH-15 @ \$1.078187 Per KWH			\$96.83
24	KWH-15 @ \$1.20 Per KWH			\$2.80
857	KWH-15 @ \$1.000026 Per KWH			\$1.00
857	KWH-15 @ \$1.000000 Per KWH			\$1.00
\$18.38 @ \$1.267 Per Order				\$23.48

FreeForm® Approach

Papyrus FreeForm®...

...enables automated processing of unstructured documents for classification and extraction. In the classification stage various self-learning procedures are employed. For the extraction process the exact position of the individual fields does not have to be known.

For quick and effective teaching of the relevant rules and to monitor the self-learning process a powerful **FreeForm® Designer** is available.

Business Data Extraction

The document process can extract business data from the document using fixed field or **FreeForm®** functionality. These data fields can be used to write response management information to the database, or update your CRM or ERP system data. Some of the data is used to formulate a personalized response according to your Response Management rules.

Fields:

- Customer name
- Invoice date
- Amount due
- Address
- Current charge
- State, zip
- ...

Data Fields are located in the Document Image by Geometric Zones (forms) or Data Extraction Rules (FreeForm®)

◆ Customer Response Management Workflow

1 Responses are received as input documents: mail, fax, Web, e-mail, SOAP message

2 Classification of responses is automatically performed. Unrecognized documents are displayed for visual classification in **Papyrus WebClassify**. Self learning technology ensures that all types of documents can be classified.

3 Content Extraction

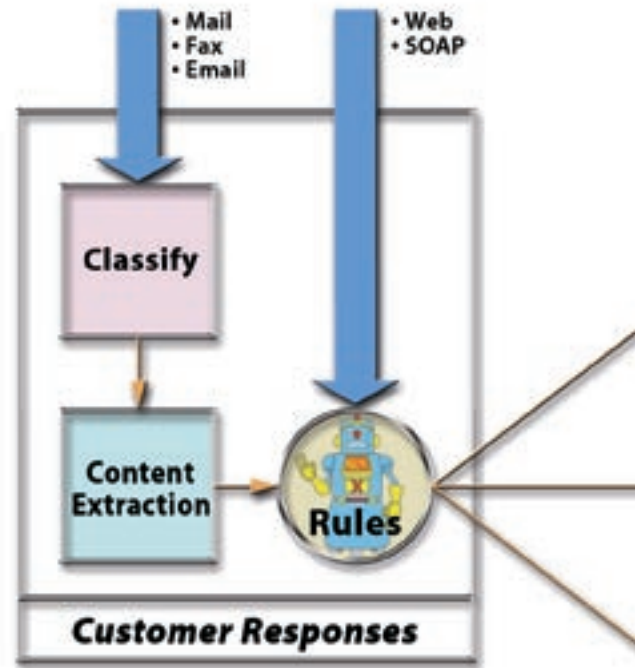
All fields of interest are extracted from the recognized document class.

4 The agent performs rule driven processing of all communication tasks.

The classification process has selected the task type and rules are used to route the task to its processing destination. Similar tasks can follow different routes depending on the department or subsidiary organization. Rules can be changed by an administrator.

5 A response is created. Following options apply:

- fully automated response
- manual response
- automated response with user intervention
- interface to CRM systems



◆ The Customer Care Clerk

The clerk has a standard Web browser interface. User access is controlled by role and policy, document type and purpose.

◆ WebPortal Inbox/Outbox

Provide access to all incoming and outgoing documents including e-mails, faxes and paper scans.

◆ Response Pending Queue

Browser-based overview of the processing status of each customer response case.

◆ WebPortal/PrintPool

Gives the authorized user access to documents ready for production printing.

◆ WebPortal/WebArchive

Provides searchable access to customer documents for viewing and reprinting, according to user authorization.

◆ Web Applications in WebPortal

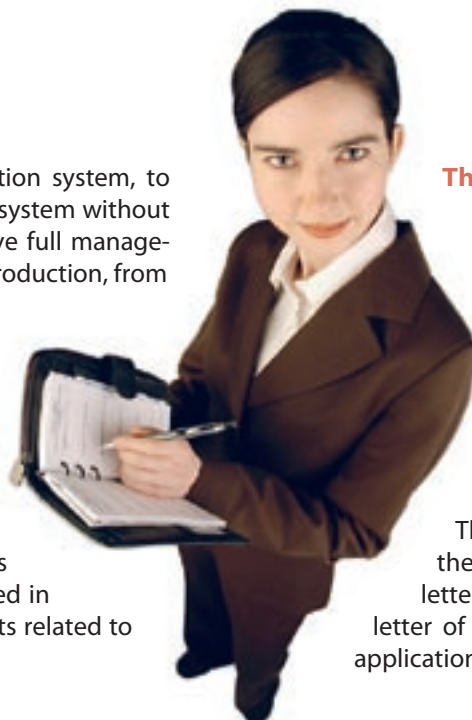
- ◇ The User fills in an automatically created HTML form with data.
- ◇ Information is sent via HTTP to the server.
- ◇ The WebPortal function can be easily integrated with other portals or Web applications.
- ◇ The document is completed with business application data and presented to the user in PDF format.

◆ User Management

Papyrus Objects uses an integrated authorization system, to ensure that no user or program can access the system without the proper authorization. Authorized users have full management control of all phases of correspondence production, from document assembly to content approval.

Defining a Corporate Organization Hierarchy

All departments and their employees with their various roles must be known to the system. Once the organization is defined, the applications to be implemented with Papyrus Objects need to be defined. These are organized in libraries, which group all objects and documents related to one user role together.



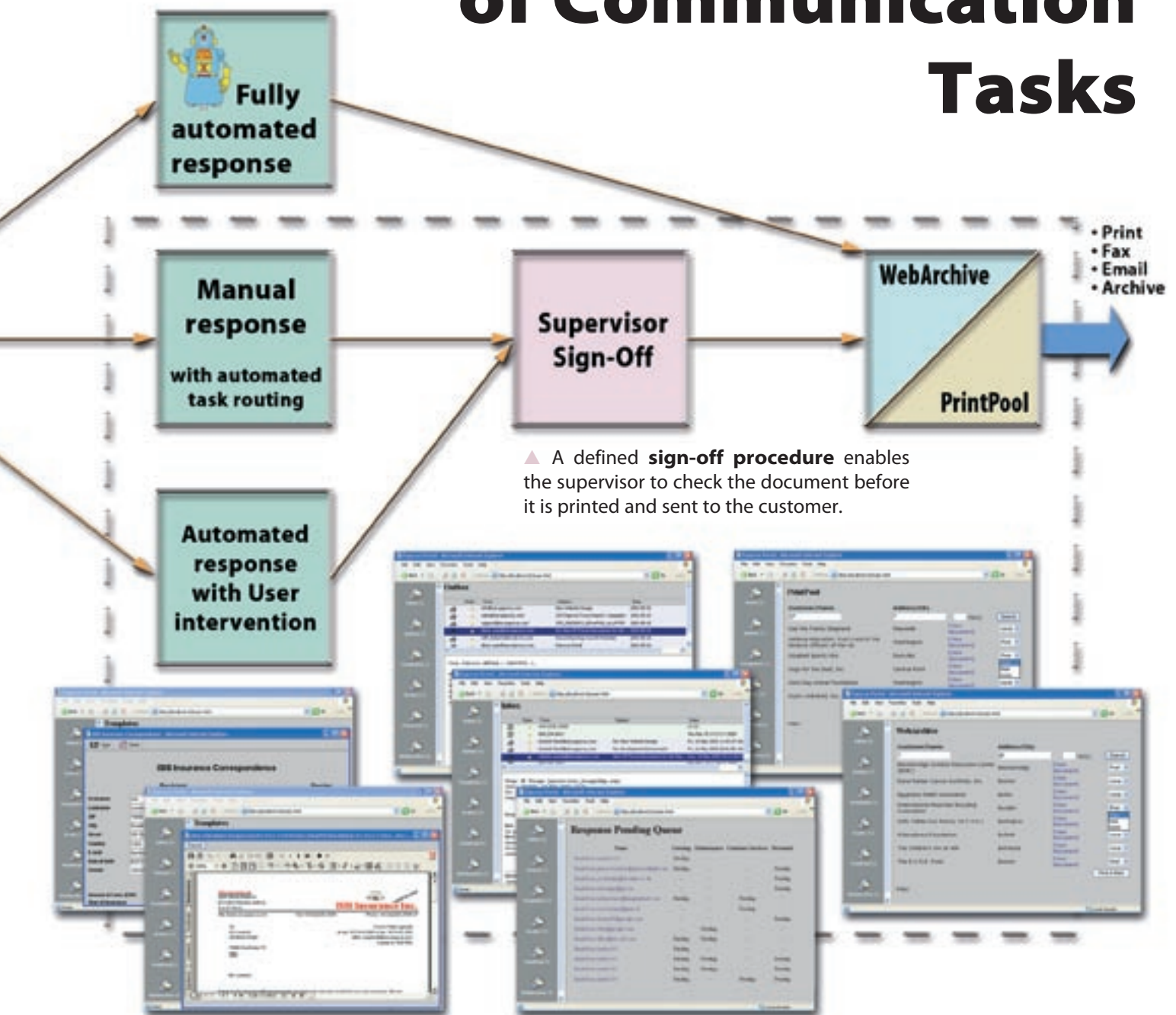
The Role and its Defined Privileges

Each user receives at least one role which can also have a privilege defined. The privilege string is defined in the method definition of the object. The Policy defines which instances a user is allowed to access.

Example:

The user may be allowed to perform the method 'delete' for one particular letter but he is only allowed to access the letter of a certain department or one specific application type.

Rule Driven Processing of Communication Tasks



◆ Authorization and Security

User Roles and Policy define what the user sees on the Papyrus Desktop GUI having a certain role. Security is provided by data and communication encryption.

Interfacing with RACF, LDAP and ACTIVE D: Logging onto the Papyrus Desktop executes the given ID and password from the customer's existing security system. Papyrus can interface with the company security system on the mainframe (i.e. RACF) and provides Adapters i.e. for LDAP. Papyrus Objects can also maintain security information in its own storage.

◆ Flexibility

Papyrus Capture as part of the **Response Manager** can be scaled to any size. Some installations capture more than 200,000 documents per day.

The communication processing is performed in **REAL-TIME** in a 24x7x52 environment. As many Windows, Linux or UNIX servers can be assigned for each queue as needed. There is no DB administration required to add new queues and the servers can be distributed across multiple locations. Users access the system through the **Papyrus Desktop** as a browser.

Multiple parallel servers make the system fault tolerant. Should a server drop out, it is simple to route it's queues to another server.

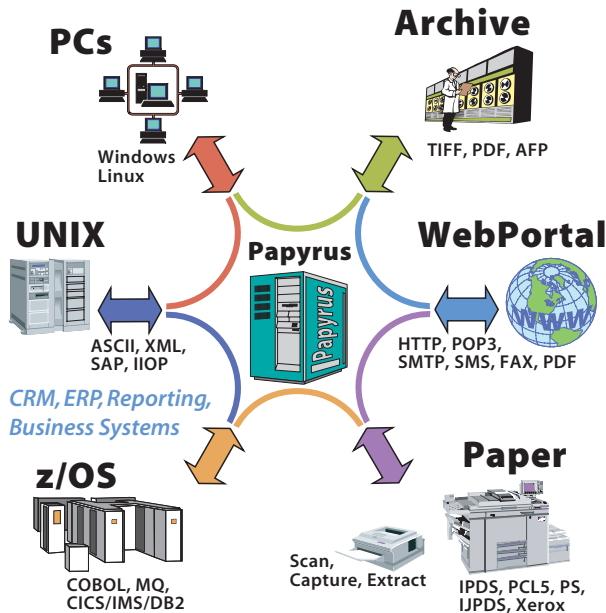
The Papyrus Objects Platform unifies all your corporate inbound and outbound business communications into a seamlessly integrated document solution.

Your investment is guaranteed!

Long-term upward compatibility, unmatched seamless platform and output channel independence.

Your Document Switchboard™

The end of programming. Java not required. XML optional.



Papyrus Document Frameworks

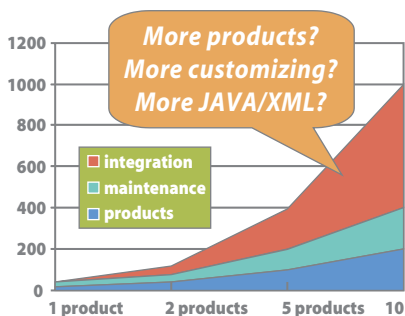
- Automated Document Factory
- Enterprise Application Integration
- Enterprise Output Management
- Enterprise Content Management
- Business Process Management
- Portal and Web Applications
- Change Management
- Correspondence
- Campaign Management
- Print Management
- Capture/Classify/Extract
- E-mail,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

"Fulfilling the needs of our corporate customers with an integrated document lifecycle solution sets us apart and make us a proven leader. Advanced technology and best of breed software products provide our customers with a competitive edge."



Annemarie Pucher Managing Director Max J Pucher Chief Architect

"Papyrus Solutions automate your document processes and integrate your business data, holding the promise to reduce cost, increase efficiency and provide enhanced capability."



Integration Cost

increases exponentially with the number of software products used.

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